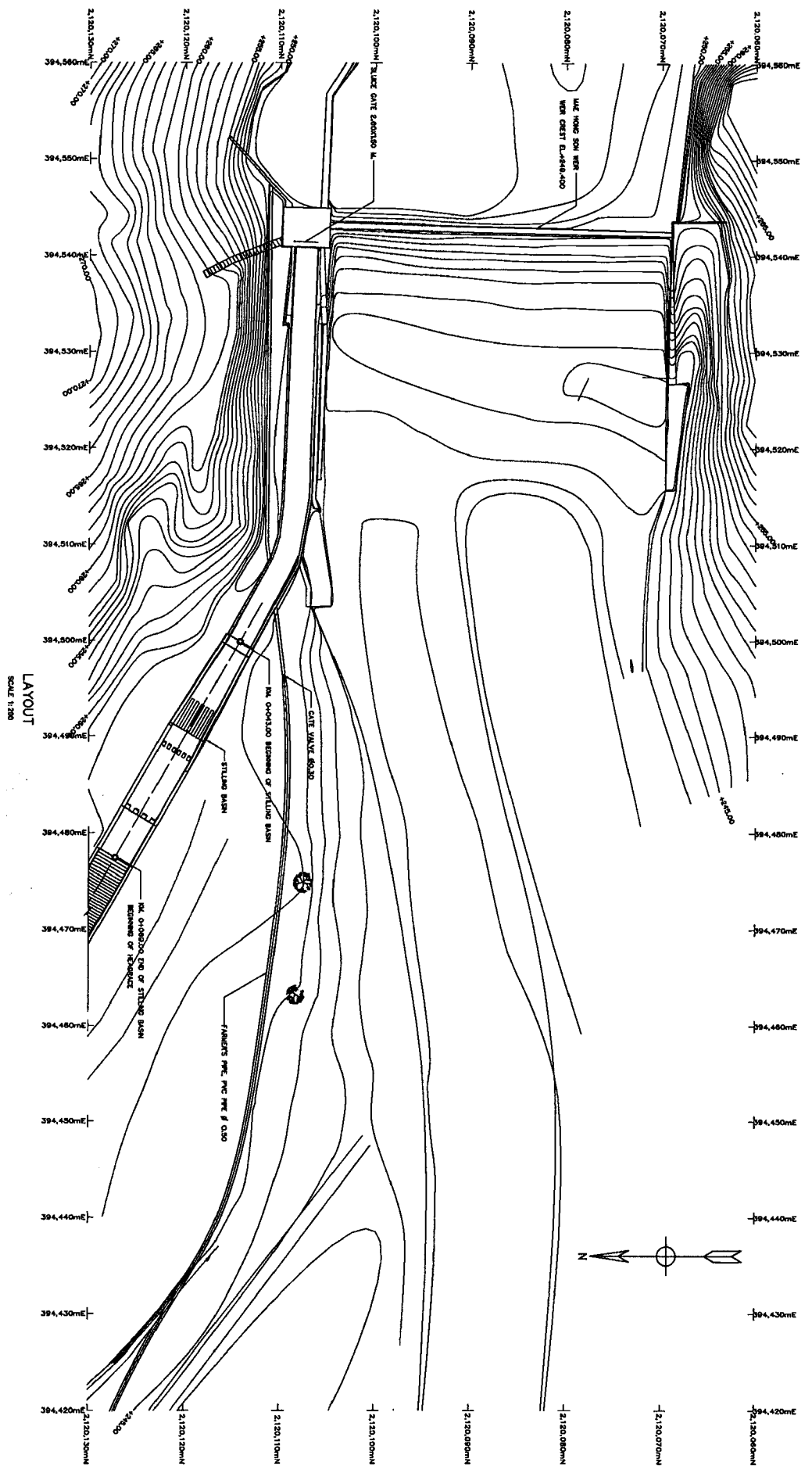




LAYOUT
SCALE 1:200

NOTES

1. ALL DIMENSIONS AND ELEVATIONS (SLAL) ARE IN METERS, UNLESS OTHERWISE SHOWN
2. SYMBOLS, ABBREVIATIONS AND GENERAL NOTES SEE DWG. NO. MS-SB-01

REFERENCE DRAWINGS :-

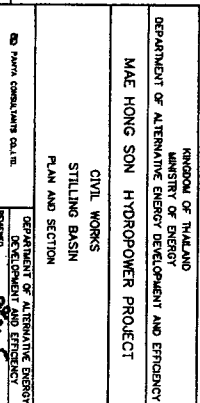
1. HEADRACE, PLAN & PROFILE, R44-000-000 TO R44-120-000
2. STILLING BASIN, PLAN AND SECTION

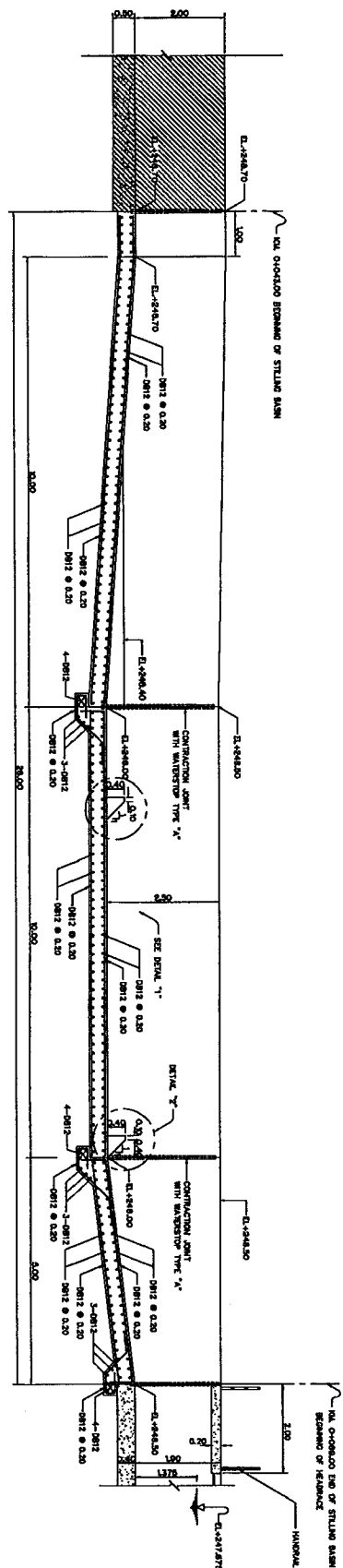
MS-SB-01
MS-SB-02

0 1 2 3 4 5
SCALE 1:200
METERS

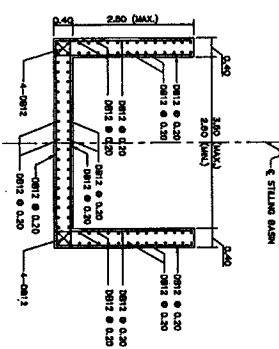
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KINGDOM OF THAILAND MINISTRY OF ENERGY DEPARTMENT OF ALTERNATIVE ENERGY DEVELOPMENT AND EFFICIENCY MAE HONG SON HYDROPOWER PROJECT CIVIL WORKS STILLING BASIN GENERAL LAY-OUT				DESIGNED DRAWN CHECKED APPROVED DATE	REVIEWED SUBMITTED RECOMMENDED APPROVED DATE	DEPARTMENT OF ALTERNATIVE ENERGY DEVELOPMENT AND EFFICIENCY GENERAL LAY-OUT
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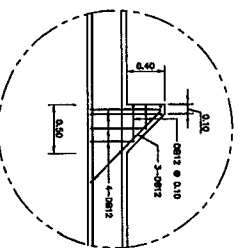




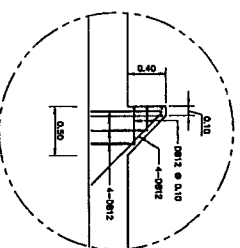
STILLING BASIN SECTION
SCALE 1:50



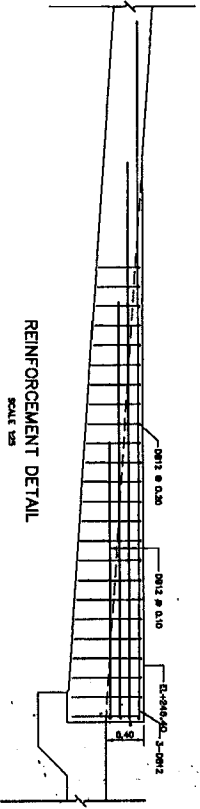
REINFORCEMENT SECTION
SCALE 1:50



DETAIL "1"
SCALE 1:50



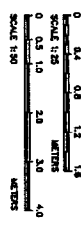
DETAIL "2"
SCALE 1:50



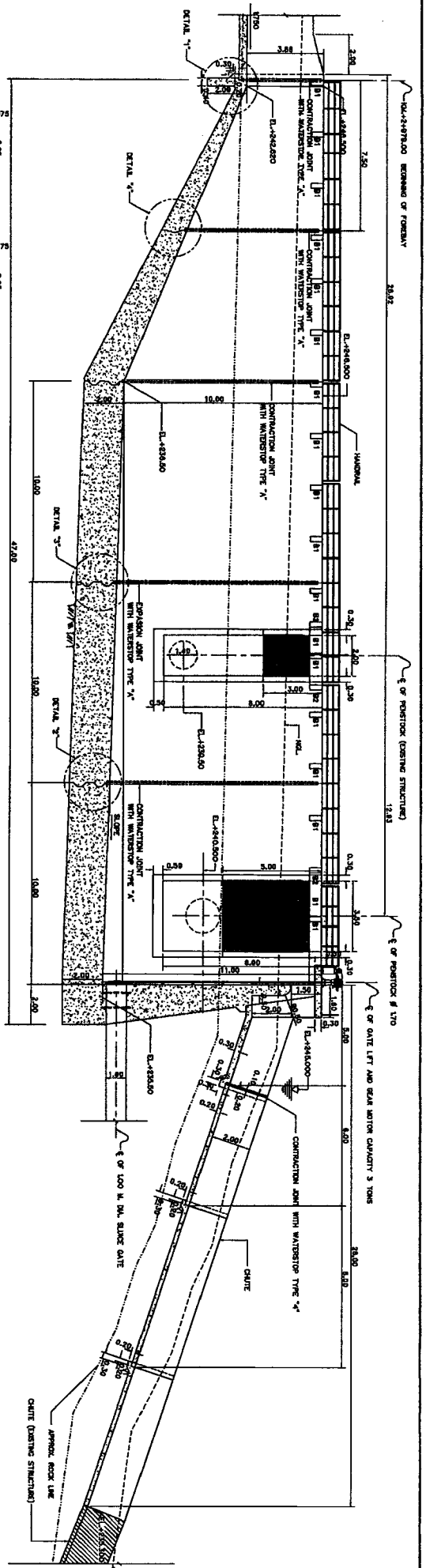
REINFORCEMENT DETAIL
SCALE 1:50

- NOTES :-
1. ALL DIMENSIONS AND ELEVATIONS (A.S.L.) ARE IN METERS
 2. REINFORCEMENT BARS ARE IN MILLIMETERS, UNLESS OTHERWISE SHOWN.
 3. SYMBOLS, ABBREVIATIONS AND GENERAL NOTES SEE Dwg. No. HES-01-01.

- REFERENCE DRAWINGS :-
1. HES-01-01
 2. HES-01-02

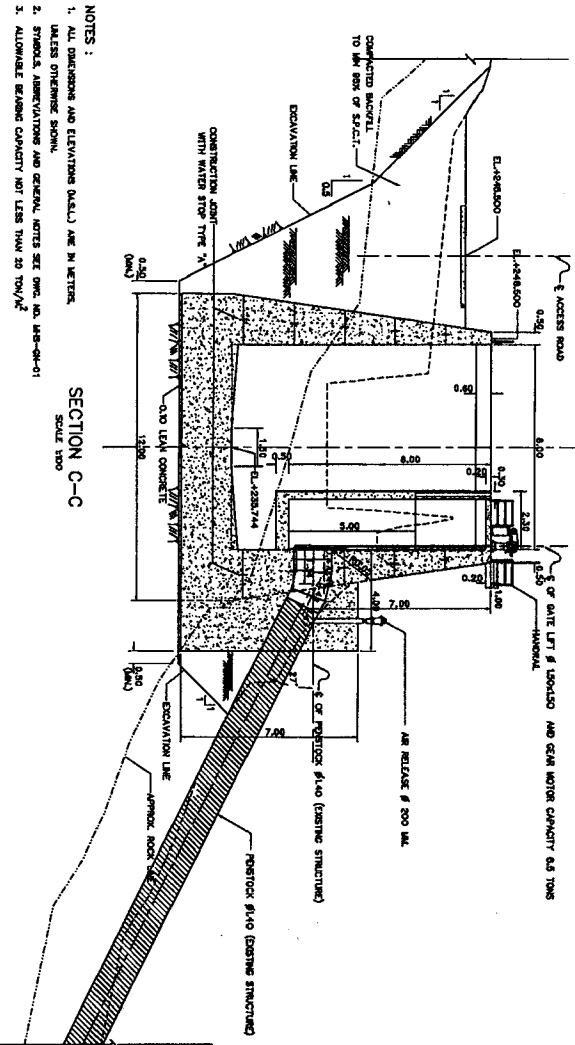


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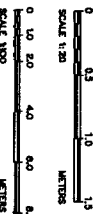
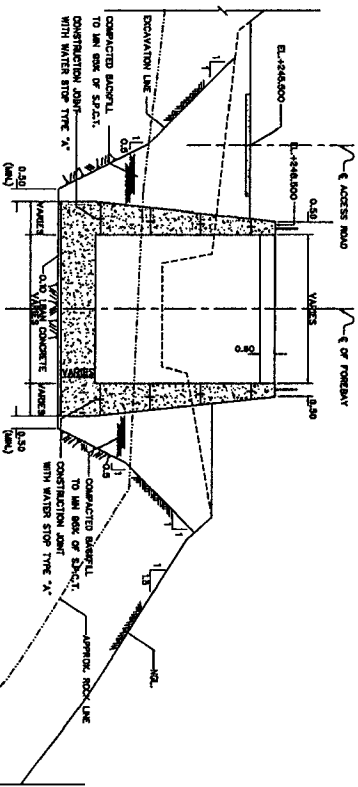


B1
SCALE 1:20

B2
SCALE 1:20



SECTION B-B
SCALE 1:20



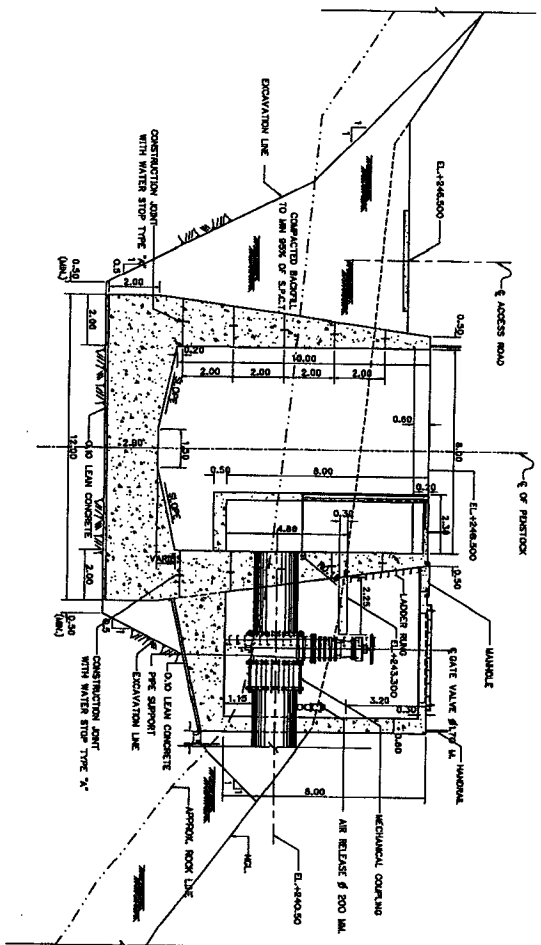
KIND OF THAILAND		DEPARTMENT OF ALTERNATIVE ENERGY DEVELOPMENT AND EFFICIENCY	
MAE HONG SON HYDROPOWER PROJECT		CIVIL WORKS	
		FOREBAY	
		SECTIONS	
DESIGNED BY		CHECKED BY	
DRAWN BY		APPROVED BY	
DATE		PROJECT NUMBER	
22/02/11		MAE-HS-02	
SHEET NO.		OF 121	

- NOTES:
1. ALL DIMENSIONS AND ELEVATIONS (M.S.L.) ARE IN METERS.
 2. UNLESS OTHERWISE SPECIFIED.
 3. MATERIAL SPECIFICATIONS AND GENERAL NOTES SEE SPEC. NO. MAE-HS-01.
 4. ALLOWABLE BEARING CAPACITY NOT LESS THAN 20 TON/M².

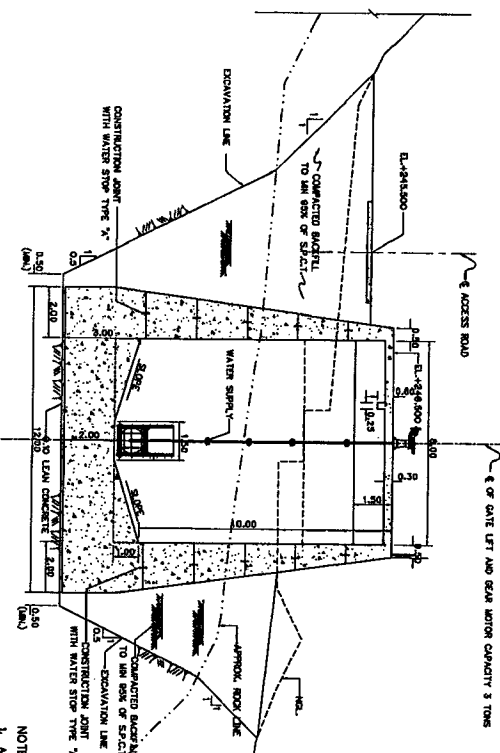
REFERENCE DRAWINGS:-

1. FOREBAY, PLAN
2. FOREBAY, SECTION AND DETAILS
3. FOREBAY, REINFORCEMENT DETAILS (SHEET 1/2)
4. FOREBAY, REINFORCEMENT DETAILS (SHEET 2/2)
5. FOREBAY, REINFORCEMENT DETAILS (SHEET 3/3)

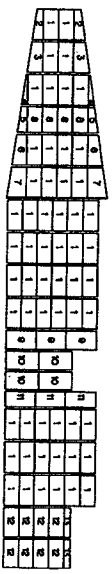
- MAE-HS-01
- MAE-HS-02
- MAE-HS-03
- MAE-HS-04
- MAE-HS-05



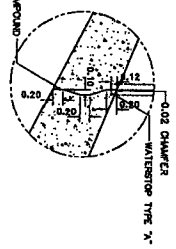
SECTION D-D
SCALE 1:50



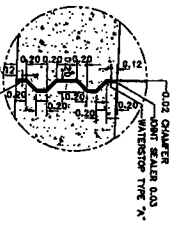
SECTION E-E
SCALE 1:50



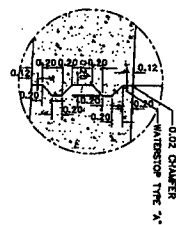
GRATING INDEX
NOT TO SCALE



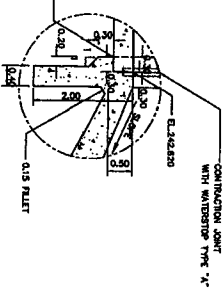
DETAIL "4"
NOT TO SCALE



DETAIL "3"
NOT TO SCALE



DETAIL "2"
NOT TO SCALE



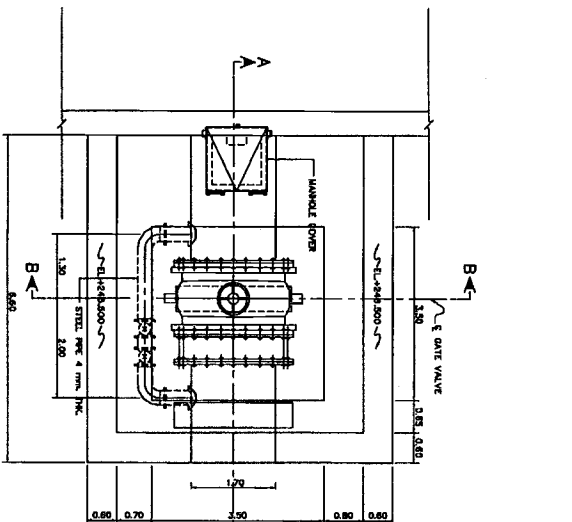
DETAIL "1"
SCALE 1:50

- NOTES :
1. ALL DIMENSIONS AND ELEVATIONS (A.S.L.) ARE IN METERS, UNLESS OTHERWISE SHOWN.
 2. STAKES, IDENTIFICATION AND GENERAL NOTES SEE Dwg. NO. MS-CH-01
 3. ALLOWABLE BEARING CAPACITY NOT LESS THAN 20 TON/M²

REFERENCE DRAWINGS :-

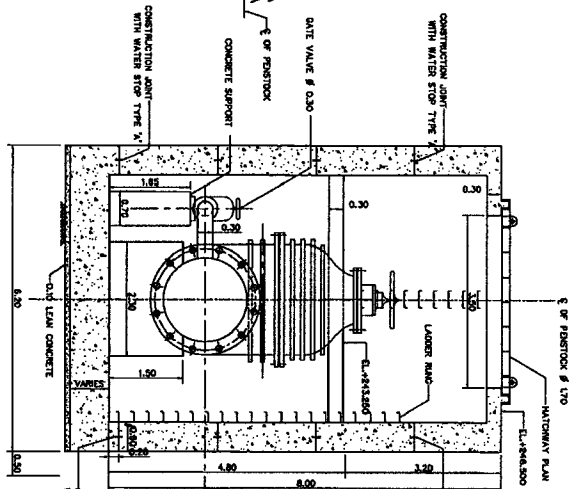
1. FOREMAN, PLAN MS-FB-01
2. FOREMAN, SECTIONS MS-FB-02
3. FOREMAN, REINFORCEMENT DETAILS (SHEET 1/3) MS-FB-03
4. FOREMAN, REINFORCEMENT DETAILS (SHEET 2/3) MS-FB-04
5. FOREMAN, REINFORCEMENT DETAILS (SHEET 3/3) MS-FB-05

REGION OF THAILAND MINISTRY OF ENERGY DEPARTMENT OF ALTERNATIVE ENERGY DEVELOPMENT AND EFFICIENCY			
MAE HONG SON HYDROPOWER PROJECT			
CIVIL WORKS FOREMAN			
SECTIONS AND DETAILS			
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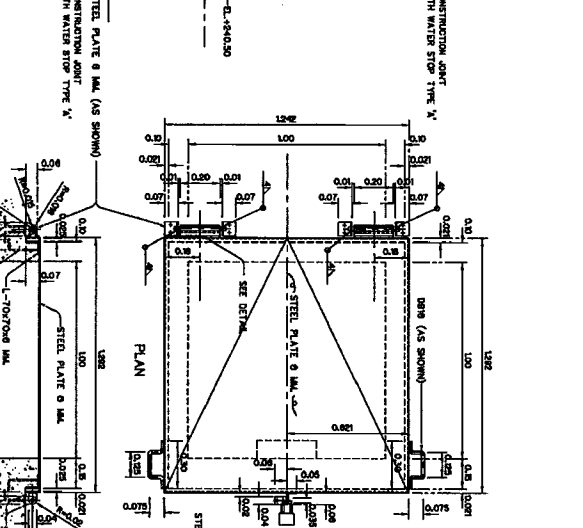
VALVE CHAMBER OF PENSTOCK $\phi 170$

PLAN
SCALE 1:50



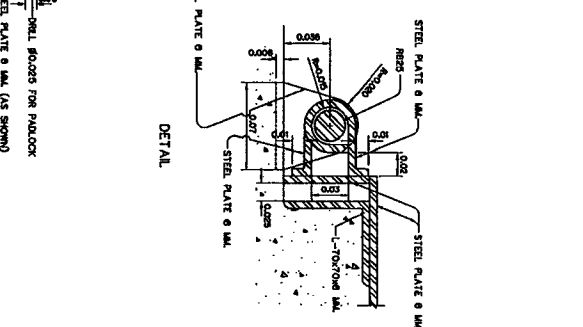
SECTION B-B

SCALE 1:50

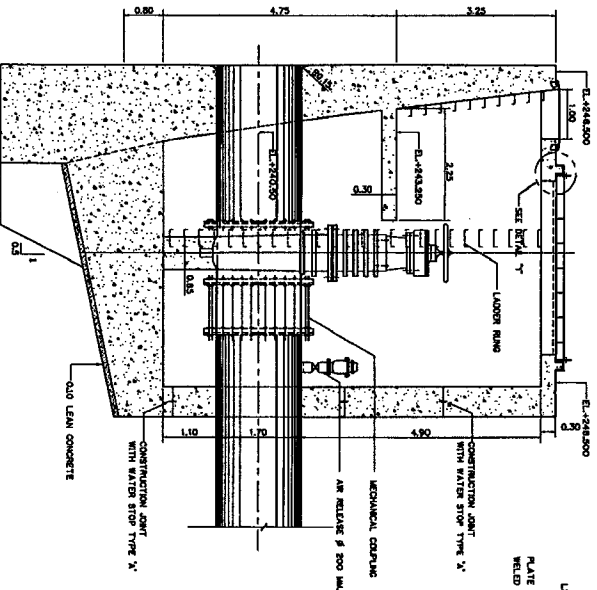


MANHOLE COVER

SCALE 1:10

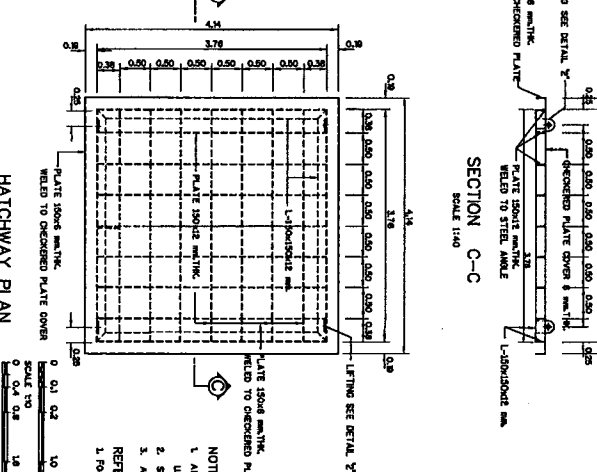


DETAIL



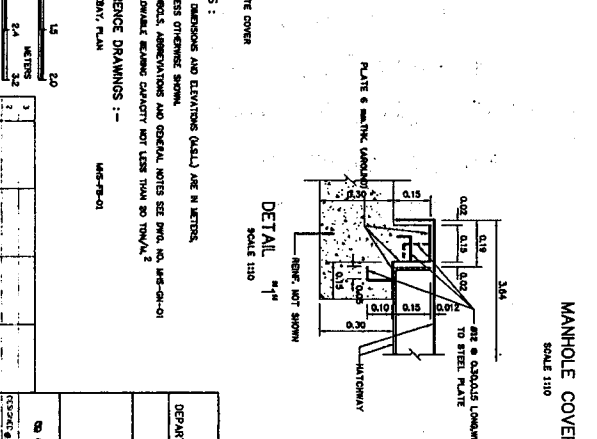
SECTION A-A

SCALE 1:50



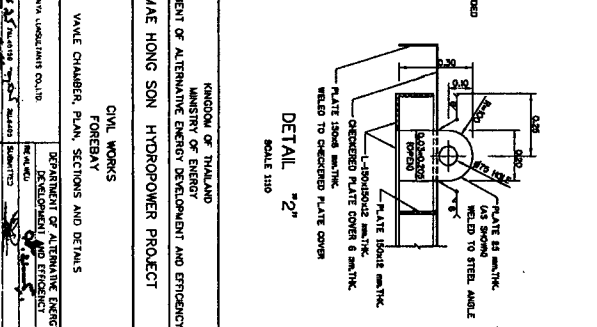
SECTION C-C

SCALE 1:10



HATCHWAY PLAN

SCALE 1:10



DETAIL

SCALE 1:10

- NOTES :
1. ALL DIMENSIONS AND ELEVATIONS (A.S.L.) ARE IN METERS, UNLESS OTHERWISE SHOWN.
 2. SYMBOLS, ABBREVIATIONS AND GENERAL NOTES SEE DWG. NO. MS-DB-01
 3. ALLOWABLE EXCESS CAPACITY NOT LESS THAN 20 TON/M²
- REFERENCE DRAWINGS :-
- MS-DB-01 FOREBAY, PLAN

SCALE 1:50

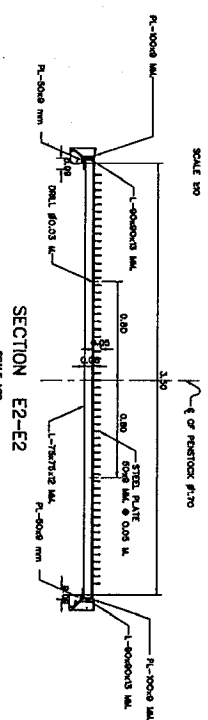
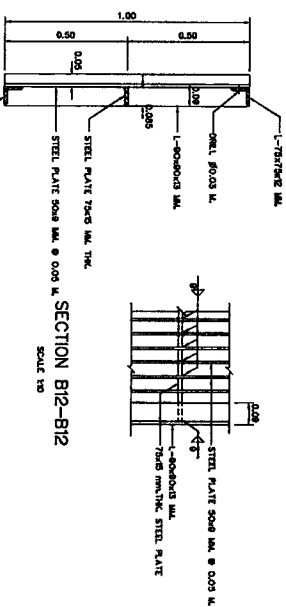
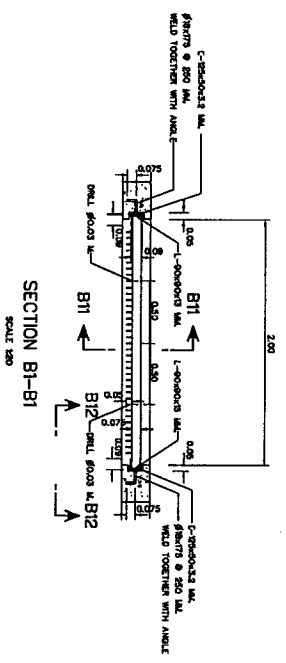
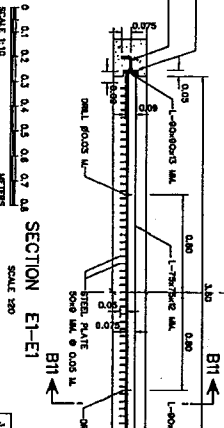
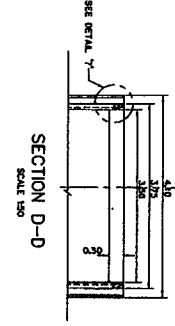
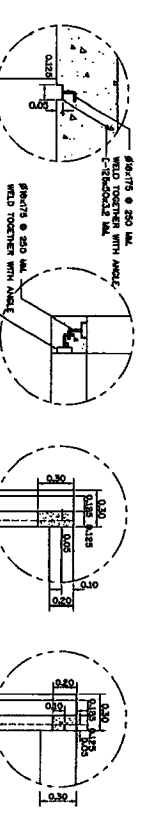
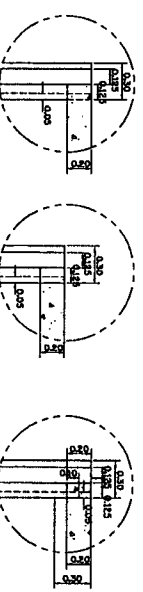
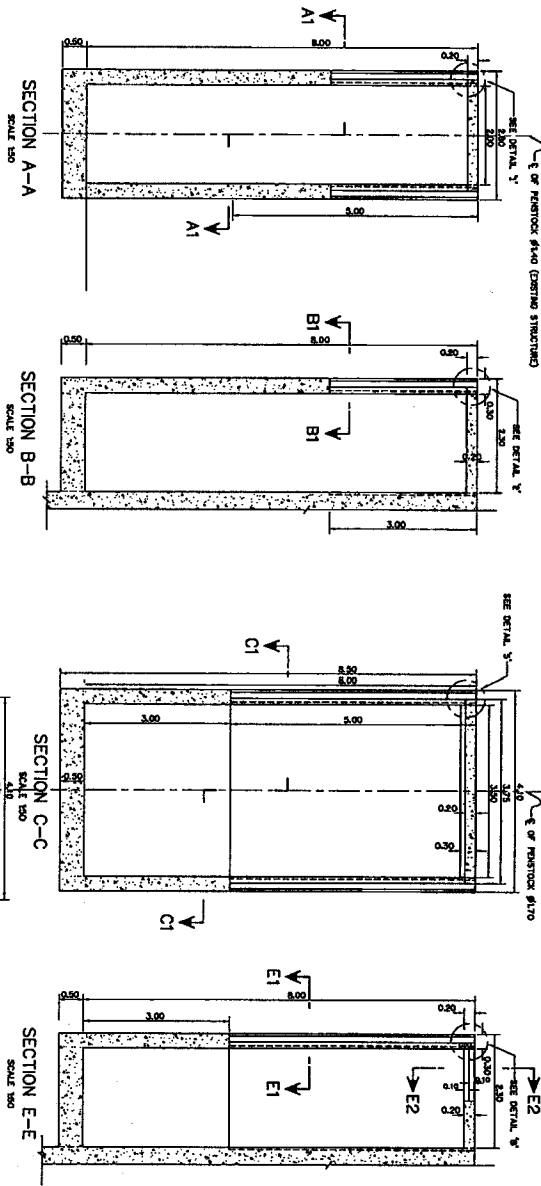
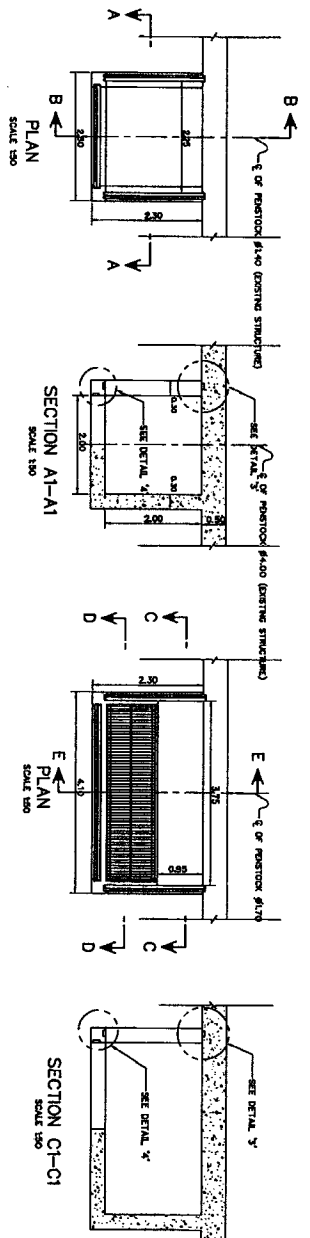
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METERS																				

SCALE 1:10

0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0
METERS																				

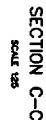
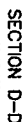
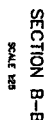
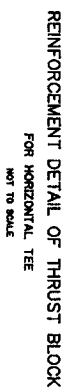
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KINGDOM OF THAILAND MINISTRY OF ENERGY DEPARTMENT OF ALTERNATIVE ENERGY DEVELOPMENT AND EFFICIENCY MAE HONG SON HYDROPOWER PROJECT CIVIL WORKS FOREBAY VALVE CHAMBER, PLAN, SECTIONS AND DETAILS		DESIGNED BY DRAWN BY CHECKED BY APPROVED BY DATE	DESIGNED BY DRAWN BY CHECKED BY APPROVED BY DATE
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NOTES:
1. ALL DIMENSIONS AND ELEVATIONS (UNLESS OTHERWISE SHOWN) ARE IN METERS.
2. SYMBOLS, ABBREVIATIONS AND SPECIAL NOTES SEE THE NO. 100-01-01
REFERENCE DRAWINGS:-
1. FOREBAY, PLAN
2. FOREBAY, WATER SUPPLY, PLAN, SECTIONS AND DETAILS B OF B

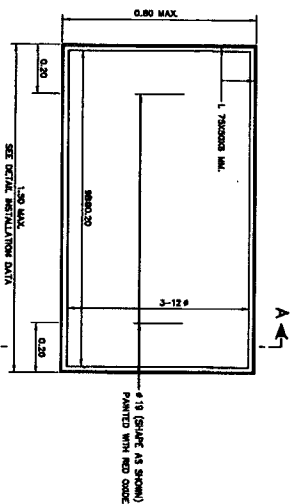
MAE HONG SON HYDROPOWER PROJECT		MINISTRY OF ENERGY	
DEPARTMENT OF ALTERNATIVE ENERGY DEVELOPMENT AND EFFICIENCY		DEPARTMENT OF ALTERNATIVE ENERGY DEVELOPMENT AND EFFICIENCY	
CIVIL WORKS		CIVIL WORKS	
WATER, PLANT, SECTIONS AND DETAILS		WATER, PLANT, SECTIONS AND DETAILS	
NO. 100-01-01		NO. 100-01-01	
REVISION		REVISION	
DATE		DATE	
DRAWING NO.		DRAWING NO.	
SHEET NO.		SHEET NO.	



1. ALL DIMENSIONS ARE IN METERS, UNLESS OTHERWISE SHOWN
 2. GLOBE VALVE AND GATE VALVE SHALL BE CAST BRONZE
 3. SCREW TYPE ACCORDANCE WITH TS. 229/2532.
 3. GALVANIZED STEEL PIPE SET, ELBOW 90° GLOBE VALVE AND GATE VALVE AND FLANGE MUST RESIST THE PRESSURE NOT LESS THAN 5 KG./CM.²
 4. ROOT VALVE SHALL BE CAST BRONZE SCREW TYPE
- ACCORDANCE WITH TS. 263

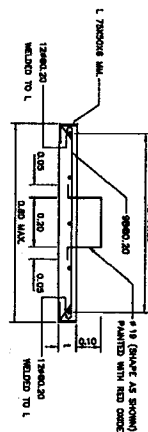
1. FOREBAY, INTAKE, PLAN SECTIONS AND DETAILS	MMB-7B-10
2. FOREBAY, WATER SUPPLY, PLAN SECTIONS AND DETAILS (2 OF 2)	MMB-7B-07

MAE HONG SON	HYDROPOWER PROJECT
KINGDOM OF THAILAND MINISTRY OF ENERGY DEPARTMENT OF ALTERNATIVE ENERGY DEVELOPMENT AND EFFICIENCY	
CIVIL WORKS	
FOREBAY	
WATER SUPPLY, PUMP, SECTIONS AND DETAILS (1 OF 2)	
DEPARTMENT OF ALTERNATIVE ENERGY DEVELOPMENT AND EFFICIENCY	
NO. PANYI CONSULTANTS CO., LTD.	



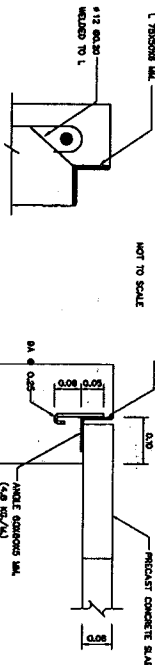
MANHOLE
NOT TO SCALE

NOT TO SCALE



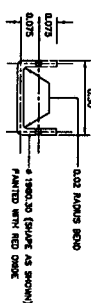
SECTION A-A

NOT TO SCALE



SECTION B-B

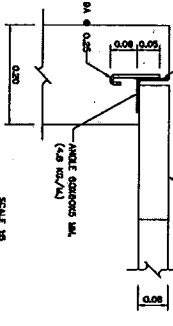
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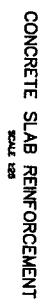
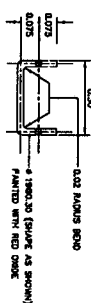
CONCRETE PLANK SUPPORT

NOT TO SCALE



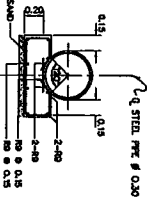
SECTION C-C

NOT TO SCALE



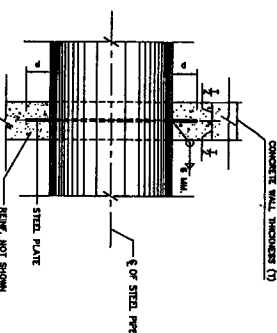
SECTION C-C

SCALE 125



CONCRETE CRADLE REINFORCEMENT

SCALE 1228



INSTALLATION OF PIPE COLLAR

NOT TO SCALE

DIMENSIONS OF PIPE COLLAR (SQUARE SHAPE)		
Ø OF STEEL PIPE (mm.)	STEEL PLATE THK. (mm.)	Ø (in.)
100 TO 250	1.2	Ø105
300 TO 400	6.0	Ø110
500 TO 600	6.0	Ø125

DIMENSIONS OF PIPE COLLAR (SQUARE SHAPE)

NOTES :

1. ALL DIMENSIONS AND ELEVATIONS (MSL) ARE IN METERS, UNLESS OTHERWISE SHOWN.

REFERENCE DRAWINGS :-

1. FONDWAY, WATER SUPPLY, PLAN, SECTIONS AND DETAILS (1 OF 2) W-3-FB-06

SCALE 1:25 METERS

DEPARTMENT OF ALTERNATIVE ENERGY DEVELOPMENT AND EFFICIENCY
MAE HONG SON HYDROPOWER PROJECT

HONG SON HYDROPOWER PROJECT

WATER SUPPLY, PLAN, SECTIONS AND DETAILS (2 OF 2)

SUPPLY, PLAN, SECTIONS AND DETAILS (2 OF 2)

DEPARTMENT OF ALTERNATIVE ENERGY
DEVELOPMENT AND EFFICIENCY

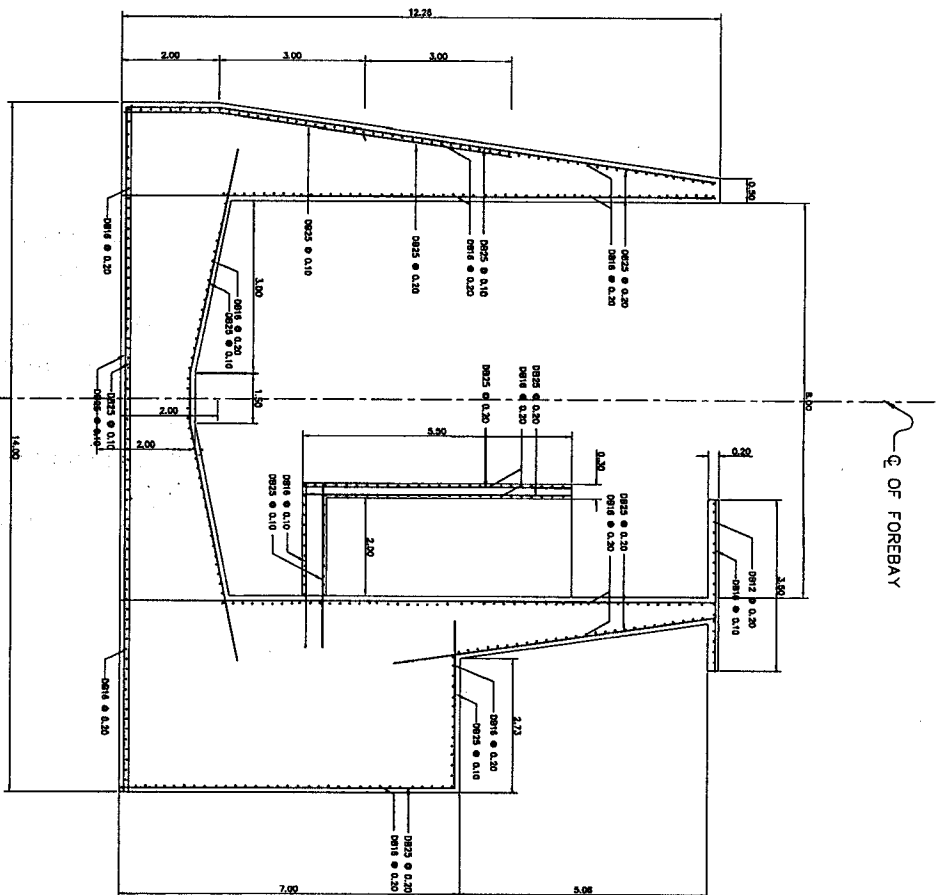
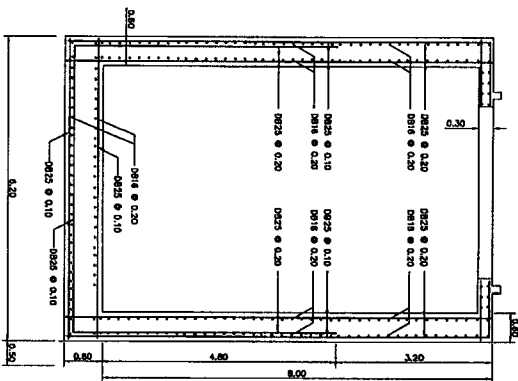
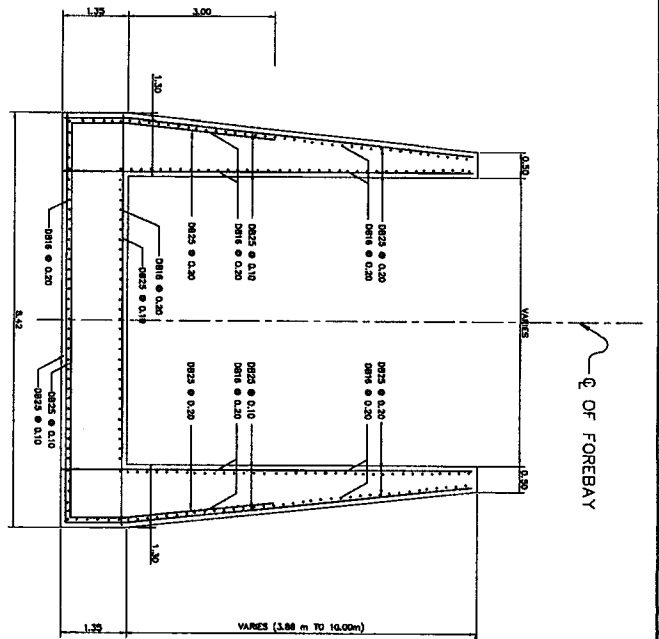
DEVELOPMENT AND OFFICE

RECEIVED	25 JUL 1992	RECEIVED
SUBMITTED	25 JUL 1992	SUBMITTED
APPROVED	25 JUL 1992	APPROVED

	RECORDED P. H. 10-1.
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NO.	DATE	REVISIONS	CHECKED
CONSULTANTS			DESK

[illegible]

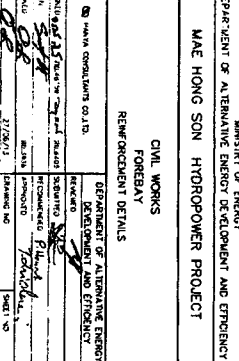
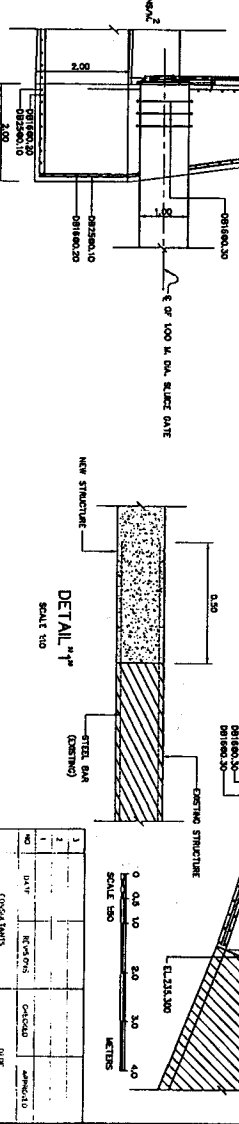
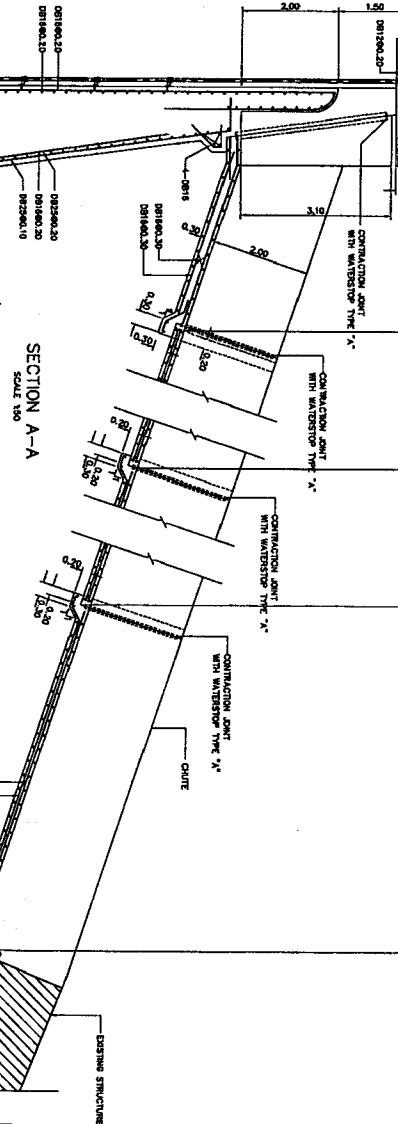
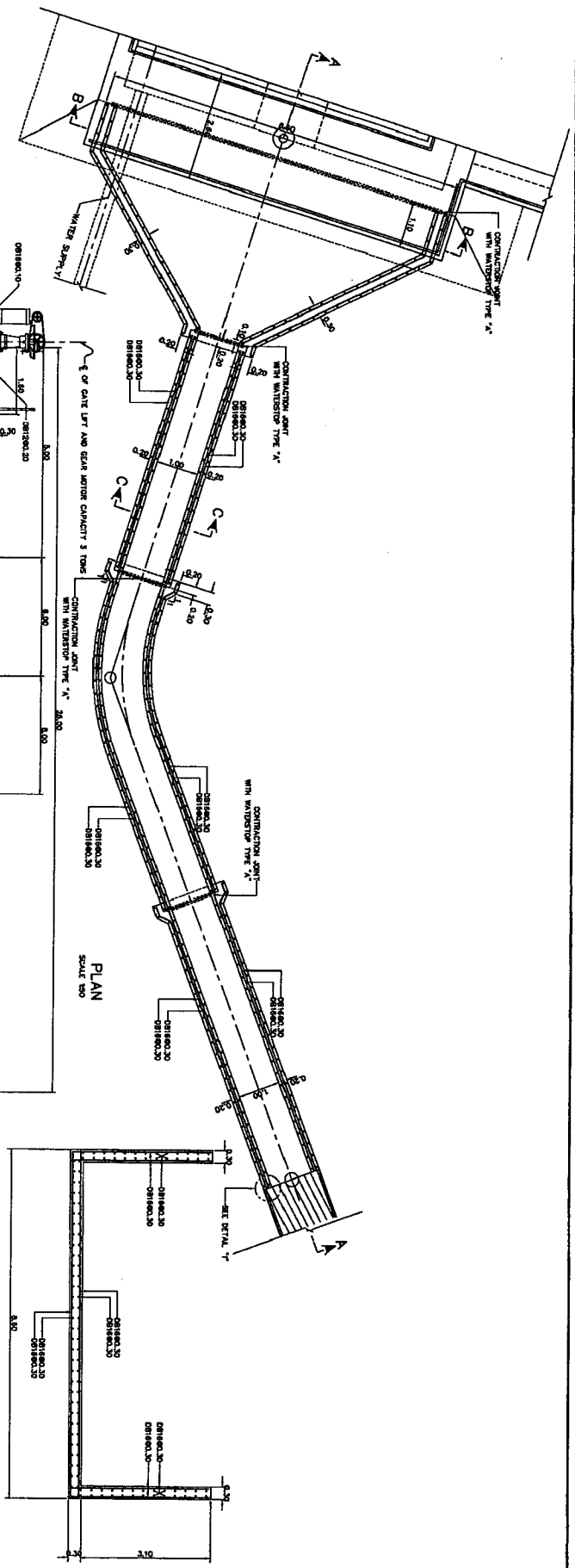


- NOTES :**

- | | |
|---|--|
| | 1. ALL DIMENSIONS AND ELEVATIONS (N.E.L.) ARE IN METERS |
| | 2. REINFORCEMENT BARS ARE AS SUPPLIED UNLESS OTHERWISE SHOWN. |
| | 3. STRUCTURAL ASSUMPTIONS AND SPECIAL NOTES SEE PAGE NO. MB-DB-01-01 |
| | 4. ALLOWABLE BEARING CAPACITY OF FOUNDATION SHALL NOT BE LESS THAN 80 TON/M ² . |
| REFERENCE DRAWINGS :- | |
| 1. FOREMAN, SECTIONS | |
| 2. FOREMAN, DETAILS | |
| 3. FOREMAN, REINFORCEMENT DETAILS (SHEET 6/7) | MB-FB-02 |
| 4. FOREMAN, REINFORCEMENT DETAILS (SHEET 6/7) | MB-FB-09 |
| 5. FOREMAN, REINFORCEMENT DETAILS (SHEET 7/7) | MB-FB-10 |

S.C.	NAME	RELATIONS	RECEIVED	CHARGES	CODE
1					
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KINGDOM OF THAILAND MINISTRY OF ENERGY DEPARTMENT OF ALTERNATIVE ENERGY DEVELOPMENT AND EFFICIENCY		MAE HONG SON HYDROPOWER PROJECT	
CIVIL WORKS FOREBAY		REMEDIATION SECTIONS	
DEPARTMENT OF ALTERNATIVE ENERGY DEVELOPMENT AND EFFICIENCY		MAE HONG SON CO. LTD. 20/11/64	
DRAWN BY 048 04/11/64 PROJECT MANAGER	CHECKED BY 048 20/11/64 DATE	DESIGNED BY 048-78-08 SHEET NO. 64 OF 131	APPROVED BY 048-78-08 DATE



NOTES :

1. ALL DIMENSIONS AND ELEVATIONS (A.S.L.) ARE IN METERS
2. REINFORCEMENT BARS ARE IN MILLIMETERS, UNLESS OTHERWISE SHOWN.
3. SYMBOLS, ABBREVIATIONS AND GENERAL NOTES SEE DRAWING NO. MS-FB-01
4. ALLOWABLE BEARING CAPACITY OF FOUNDATION SHALL NOT BE LESS THAN 20 TONS/M²

REFERENCE DRAWINGS :-

1. FOREBAY, SECTIONS AND DETAILS
2. FOREBAY, SECTIONS AND DETAILS
3. FOREBAY, REINFORCEMENT DETAILS SHEET 0/3
4. FOREBAY, REINFORCEMENT DETAILS SHEET 0/3

NO.	DATE	REVISIONS	BY	CHECKED	DATE
1	1/1/10	ISSUED FOR TENDERS	MS-FB-10		

MINISTRY OF THAILAND
DEPARTMENT OF ALTERNATIVE ENERGY DEVELOPMENT AND EFFICIENCY

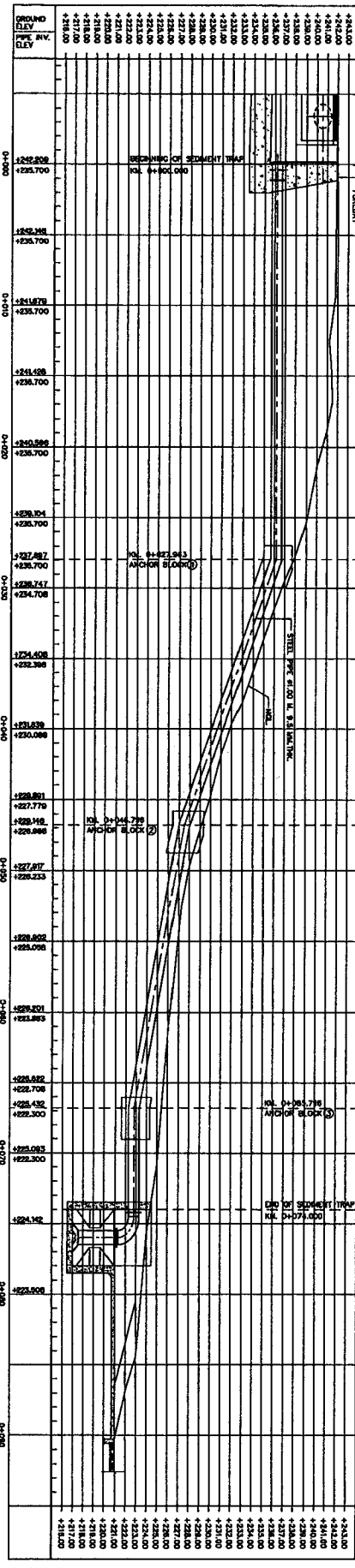
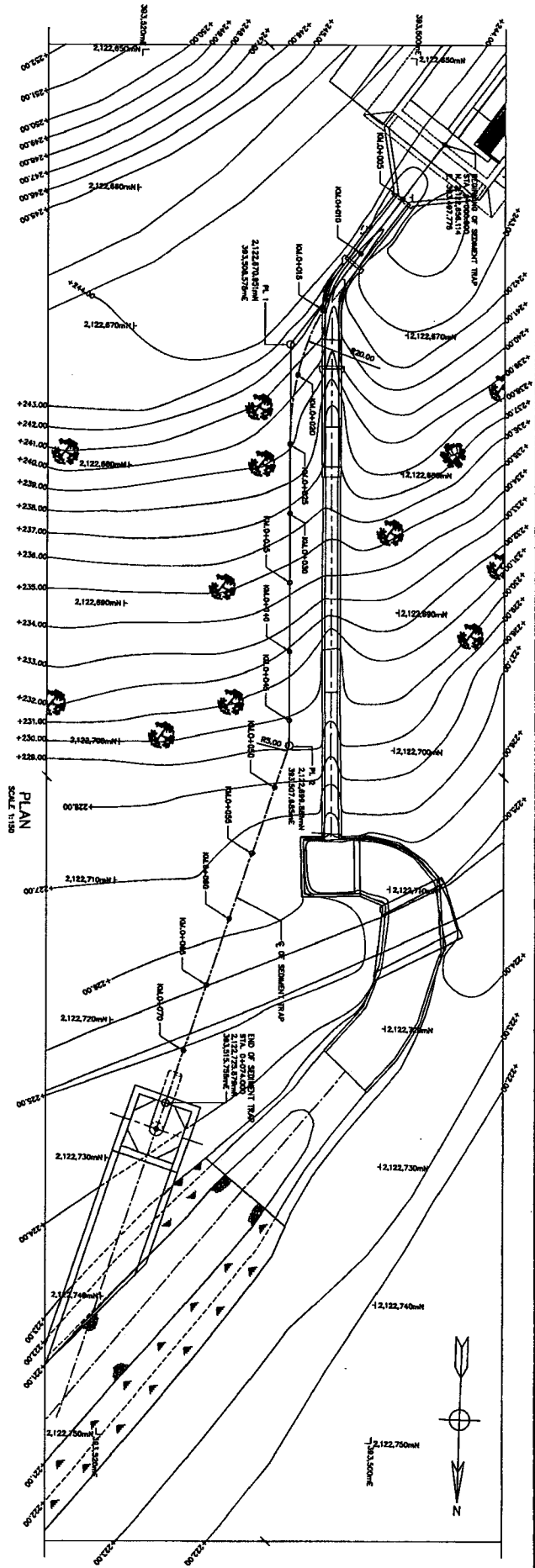
MAE HONG SON HYDROPOWER PROJECT

CIVIL WORKS
FOREBAY
REINFORCEMENT DETAILS

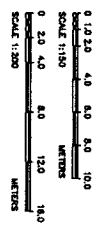
DESIGNED BY: *[Signature]*
CHECKED BY: *[Signature]*
DATE: 27/06/10

REVIEWED BY: *[Signature]*
DATE: 27/06/10

DRAWING NO: MS-FB-10
SHEET NO: 16 OF 151
(SHEET 3/3)



- NOTES:
1. ALL DIMENSIONS AND ELEVATIONS (A.S.L.) ARE IN METERS, UNLESS OTHERWISE SHOWN
 2. SYMBOLS, ABBREVIATIONS AND GENERAL NOTES SEE Dwg. NO. MHS-CH-01
 3. ALLOWABLE BEARING CAPACITY OF FOUNDATION SHALL NOT BE LESS THAN 10 TONS/M²
- REFERENCE DRAWINGS :-
1. FOREBAY PLAN MHS-FB-01
 2. FOREBAY, SEDIMENT TRAP, REMEDIATION DETAILS MHS-FB-12
 3. FOREBAY, DAM REMEDIATION, LAY-OUT MHS-FB-14



NO.	DATE	REVISIONS	CHECKED	APPROVED
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MAE HONG SON HYDROPOWER PROJECT

CIVIL WORKS

FOREBAY

SEDIMENT TRAP: PLAN AND PROFILE

DESIGNED BY: JAYA CHANLAKHOLKUL

DRAWN BY: JAYA CHANLAKHOLKUL

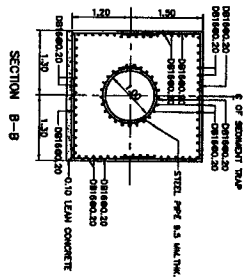
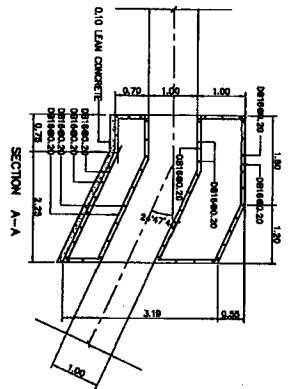
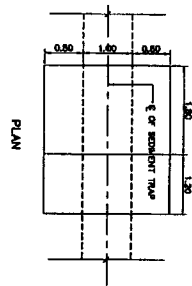
CHECKED BY: JAYA CHANLAKHOLKUL

APPROVED BY: JAYA CHANLAKHOLKUL

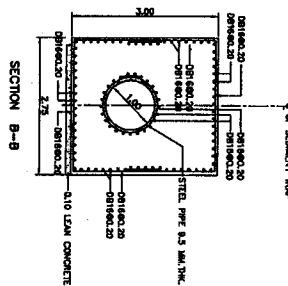
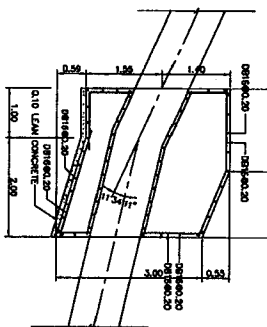
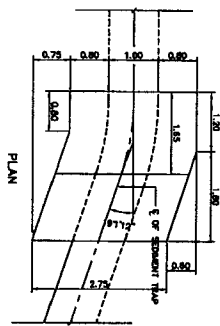
DATE: 21/09/13

DRAWING NO: MHS-FB-11

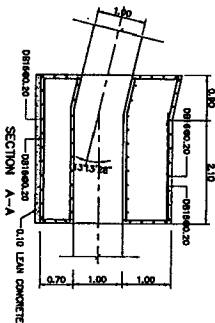
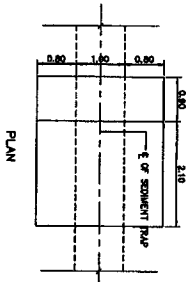
SHEET NO: 87 OF 131



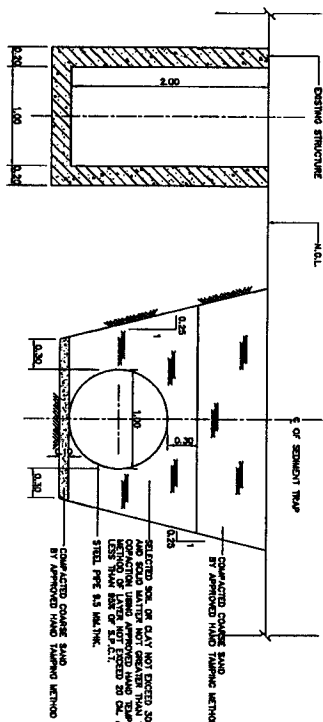
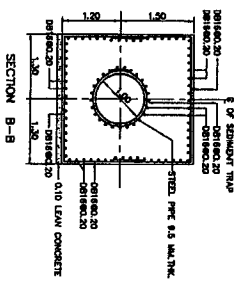
ANCHOR BLOCK NO.1
SCALE 1:50



ANCHOR BLOCK NO.2
SCALE 1:50

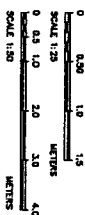


ANCHOR BLOCK NO.3
SCALE 1:50



TYPICAL SECTION OF SEDIMENT TRAP
SCALE 1:25

- NOTES :
1. ALL DIMENSIONS AND ELEVATIONS (G.S.D.) ARE IN METERS
 2. REINFORCEMENT BARS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN
 3. STEEL PIPE APPROXIMATIONS AND SPECIAL NOTES SEE DWG. NO. MHS-DB-04
 4. ALLOWABLE BEARING CAPACITY OF FOUNDATION SHALL NOT BE LESS THAN 10 TONS/M²
- REFERENCE DRAWINGS :-
1. FOREBAY, SEDIMENT TRAP, PLAN AND PROFILE MHS-DB-11
 2. FOREBAY, SEDIMENT TRAP, BOND DETAILS MHS-DB-12



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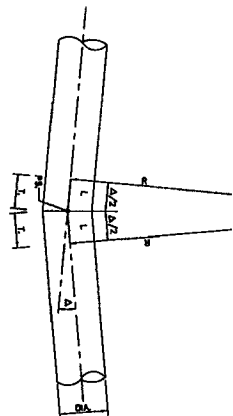
MINISTRY OF TANK AND
HYDROPOWER PROJECT
DEPARTMENT OF ALTERNATIVE ENERGY
SEDIMENT TRAP, REINFORCEMENT DETAILS

CIVIL WORKS
FOREBAY

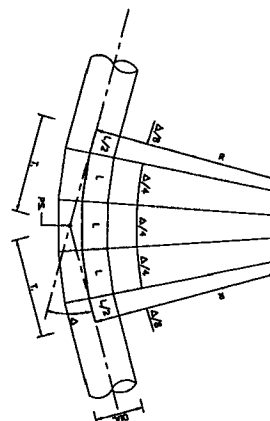
DEPARTMENT OF ALTERNATIVE ENERGY
DEVELOPMENT AND EFFICIENCY

DESIGNED BY: MHS-DB-11
CHECKED BY: MHS-DB-12
DATE: 27/06/13

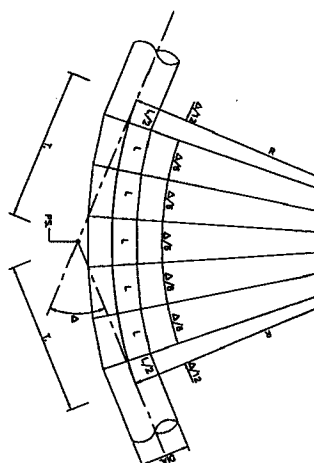
DRAWING NO: MHS-DB-12
SHEET NO: 66 OF 131



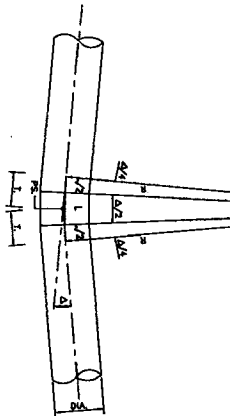
BEND TYPE "1"
DETAILED 1:20
SCALE 1:20



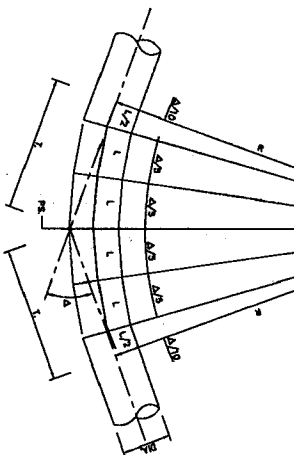
BEND TYPE "4"
DETAILED 1:20
SCALE 1:20



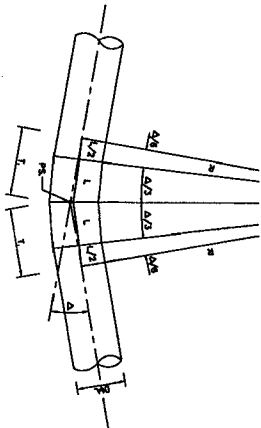
BEND TYPE "6"
DETAILED 1:20
SCALE 1:20



BEND TYPE "2"
DETAILED 1:20
SCALE 1:20



BEND TYPE "5"
DETAILED 1:20
SCALE 1:20



BEND TYPE "3"
DETAILED 1:20
SCALE 1:20

NOTES:

1. ALL DIMENSIONS AND ELEVATIONS (N.A.S.) ARE IN METERS, UNLESS OTHERWISE SHOWN
2. SYMBOLS, ABBREVIATIONS AND GENERAL NOTES SEE CIVIL NO. 445-24-01

REFERENCE DRAWINGS :-

1. FORECAST, SEDIMENT TRAP, REINFORCEMENT DETAILS

DIMENSIONS OF BENDS									
BEND	NO.	TYPE OF PIPE	MADE OF	BLACK	Δ (DEGREE)	T (M)	R (M)	SH. (M)	L (M)
1	1	100-125	1	1	1	1	1	1	1
2	2	100-125	2	2	2	2	2	2	2
3	3	100-125	3	3	3	3	3	3	3



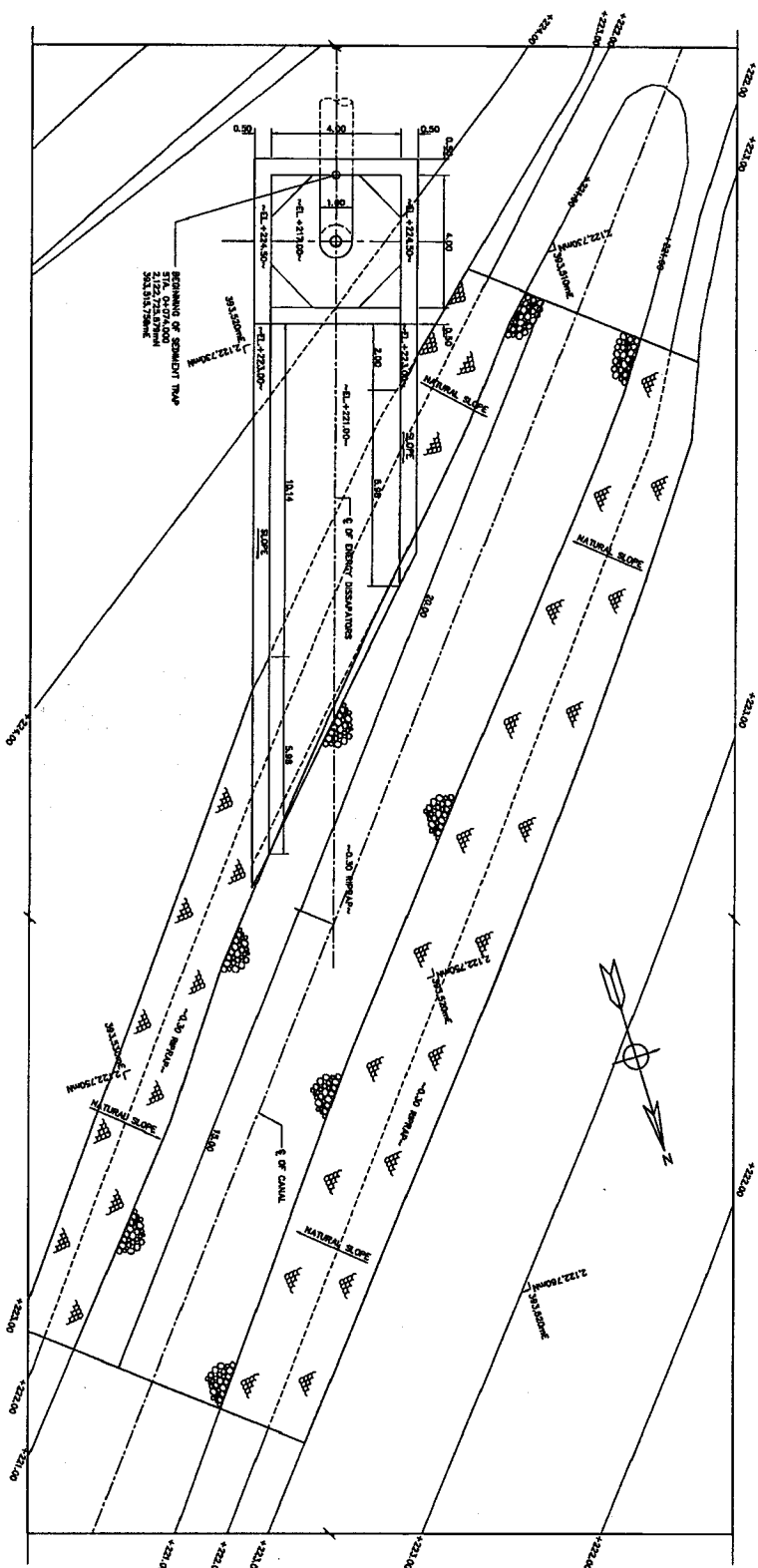
NO.	DATE	REVISIONS	CHECKED	APPROVED	BY
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KINGDOM OF THAILAND MINISTRY OF ENERGY DEPARTMENT OF ALTERNATIVE ENERGY DEVELOPMENT AND EFFICIENCY	
MAE HONG SON HYDROPOWER PROJECT	
CIVIL WORKS FORECAST	
SEDIMENT TRAP - BEND DETAILS	
DRAWN BY 37/20/13	CHECKED BY 37/20/13
DESIGNED BY 37/20/13	APPROVED BY 37/20/13
PROJECT NUMBER 37/20/13	SHEET NO. 69 OF 121

- NOTES:
1. ALL DIMENSIONS AND ELEVATIONS (M.S.L.) ARE IN METERS, UNLESS OTHERWISE SHOWN
 2. SYMBOLS, ABBREVIATIONS AND GENERAL NOTES SEE DWM. NO. MHS-04-01
- REFERENCE DRAWINGS :-
1. FOREBAY, SCHEMATIC PLAN, PLAN AND PROFILE
 2. FOREBAY, DETAIL OF DISSIPATORS, PLAN AND SECTIONS

MHS-FB-11
MHS-FB-13

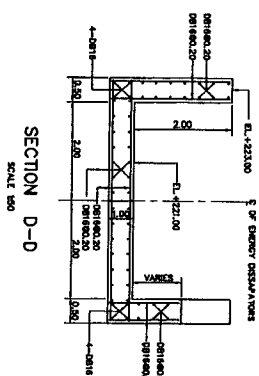
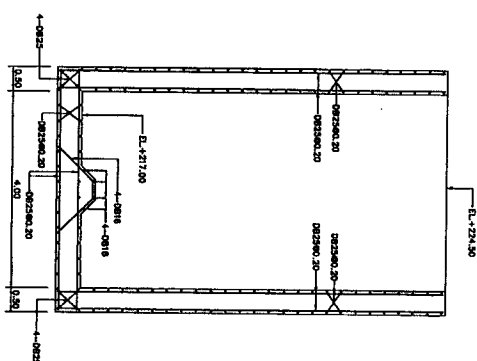
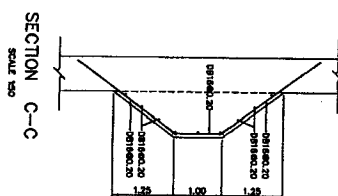
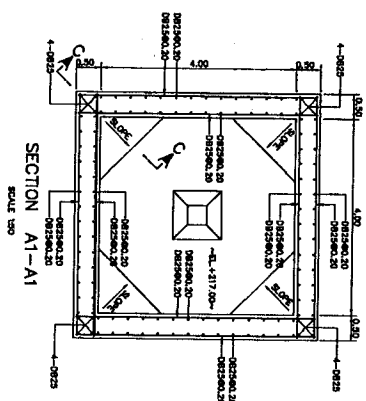
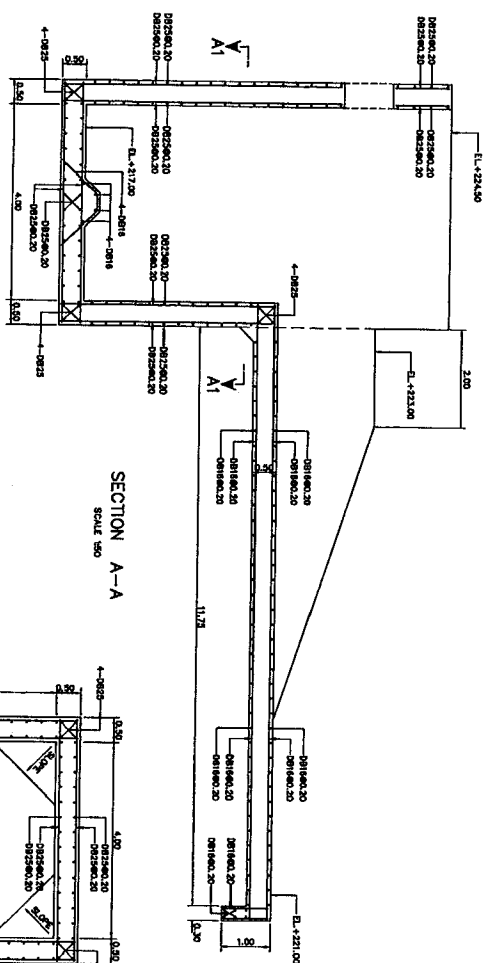
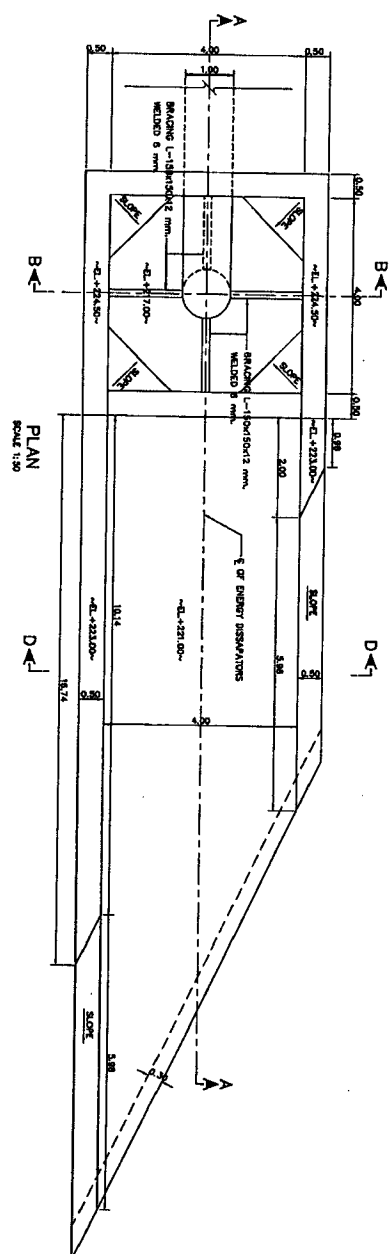
LAY-OUT
SCALE 1:75



0 0.5 1.0 2.0 3.0 4.0 5.0
METERS
SCALE 1:75

NO.	REVISIONS	DATE	BY	CHKD.	APPV.
1					
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KINGDOM OF THAILAND MINISTRY OF ENERGY DEPARTMENT OF ALTERNATIVE ENERGY DEVELOPMENT AND EFFICIENCY	
MAE HONG SON HYDROPOWER PROJECT	
CIVIL WORKS FOREBAY ENERGY DISSIPATORS, LAY-OUT	
DESIGNED BY: <i>[Signature]</i> CHECKED BY: <i>[Signature]</i> DATE: 27/04/11	REVIEWED BY: <i>[Signature]</i> APPROVED BY: <i>[Signature]</i> DATE: MHS-FB-14
DRAWING NO. MHS-FB-14	SHEET NO. 10 OF 13



NOTES:

1. ALL DIMENSIONS AND ELEVATIONS (F.S.L.) ARE IN METERS

REINFORCEMENT BARS ARE IN ITALICIZED, VALUETS OBTAINING BROWN.

2. SYMBOLS, ABBREVIATIONS AND GENERAL NOTES SEE DWG. NO. WHP-04-01

REFERENCE DRAWINGS :-

1. FOREBAY, ENERGY DISSIPATORS, PLAN AND SECTIONS

44-38861-10



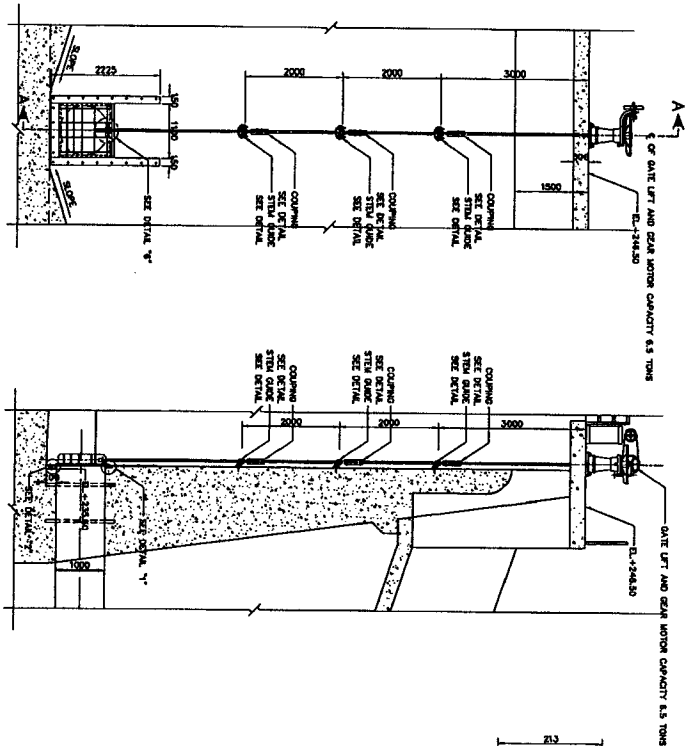
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NO.	DATE	REMARKS	CHECKED APPROVED
COMPLAINTS			NOTE

ISSUANCE	DATE	BY	REMARKS
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PROJECT MANAGER			
ISSUANCE	DATE	BY	REMARKS
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PROJECT MANAGER			

KINGDOM OF THAILAND
 MINISTRY OF ENERGY
 DEPARTMENT OF ALTERNATIVE ENERGY DEVELOPMENT AND EFFICIENCY
 MAE HONG SON HYDROPOWER PROJECT

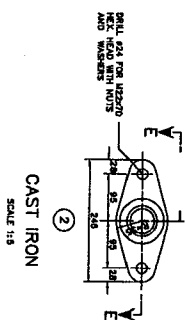
CIVIL WORKS
FOREBAY
ENERGY DISSIPATORS, REINFORCEMENT DETAILS

DEVELOPMENT AND EFFICIENCY	REVIEWED	DESIGNED BY	DATE
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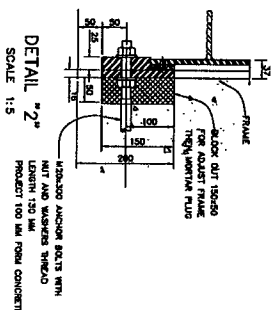


ASSEMBLY
SCALE 1:50

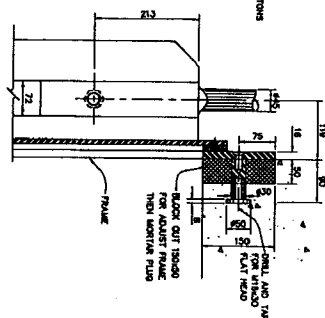
SECTION A-A
SCALE 1:50



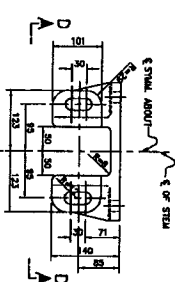
CAST IRON
SCALE 1:5



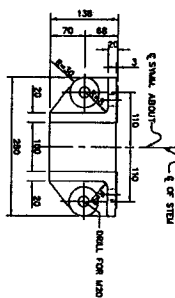
DETAIL "2"
SCALE 1:5



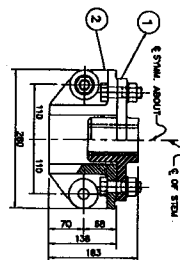
DETAIL "1"
SCALE 1:5



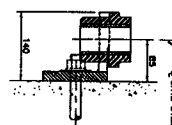
CAST IRON
SCALE 1:5



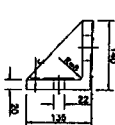
SECTION C-C
SCALE 1:5



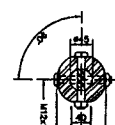
STEM GUIDE (CAST IRON)
SCALE 1:5



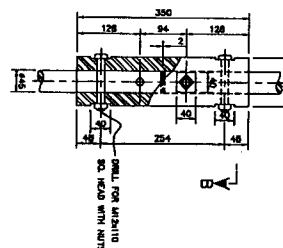
STEM GUIDE DETAIL "1"
SCALE 1:5



SECTION D-D
SCALE 1:5



SECTION B-B
SCALE 1:5



COUPLING
SCALE 1:5

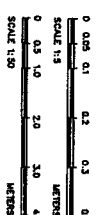
NOTES :

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN.
2. ALL WELDING SHALL BE 6 MILLIMETER UNLESS OTHERWISE SHOWN.
3. ALL BOLTS AND NUTS USE A307 A308.
4. ALL STRUCTURAL STEELS ARE AS 0 3061 S3400.
5. ALL STAINLESS STEEL PLATES ARE AS 0 4304 S30 304.

REFERENCE DRAWINGS :

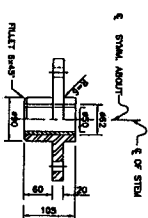
1. FOREBAY SECTIONS
2. FOREBAY, 100 X 100 M. SAND BLADE DATE DATE DETAILS

MAE-HB-02
MAE-HB-18



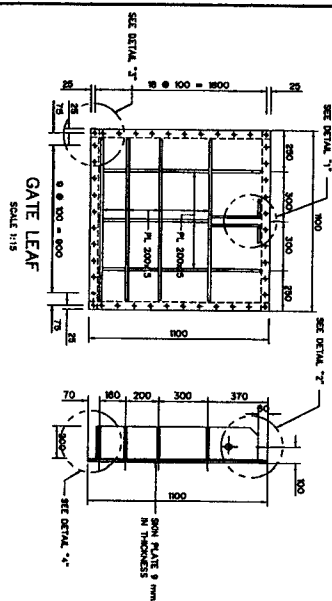
SECTION D-D (STEEL & PHOSPHOR BRONZE)

SCALE 1:5

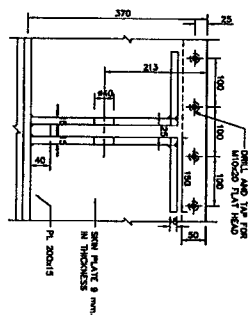


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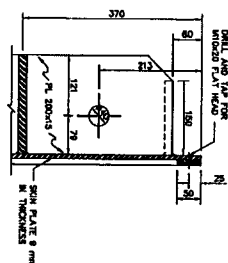
CIVIL WORKS		MAE HONG SON HYDROPOWER PROJECT	
FOREBAY		MINISTRY OF ENERGY	
1.00 X 1.00 M. SAND BLADE DATE DATE INSTALLATION		DEPARTMENT OF ALTERNATIVE ENERGY DEVELOPMENT AND EFFICIENCY	
DESIGNED BY	MAE-HB-02	REVIEWED BY	MAE-HB-18
CHECKED BY	MAE-HB-02	APPROVED BY	MAE-HB-18
DATE	27/06/03	DATE	27/06/03
PROJECT NUMBER	MAE-HB-17	SHEET NO.	75 OF 131



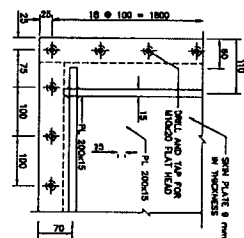
GATE LEAF



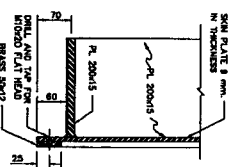
DETAIL "1"



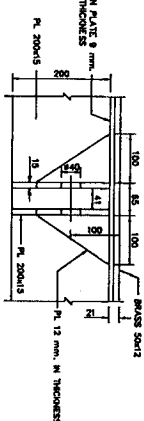
DETAIL "2"



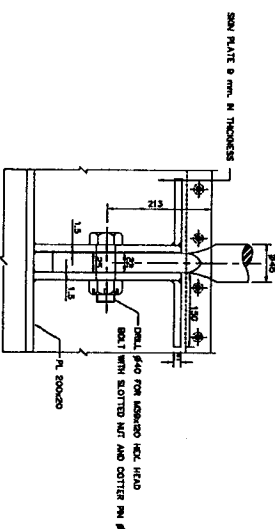
DETAIL "3"



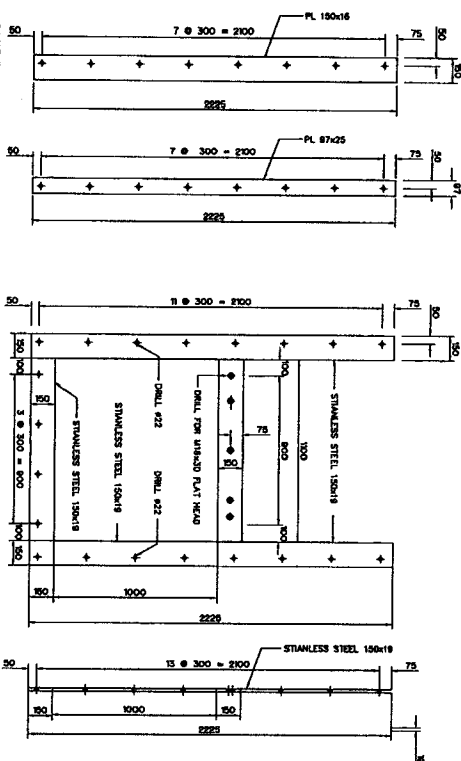
DETAIL "4"
SCALE 1:5



DETAIL "5"



DETAIL "E"
SCALE 1:5



GUIDE BAF

FILLER

FRAME
SCALE 1:10

- NOTES :**
1. ALL DIMENSIONS ARE IN MILLIMETERS, UNLESS OTHERWISE SHOWN.
 2. ALL REINFORCING SHALL BE E WELDED WIRE, UNLESS OTHERWISE SHOWN.
 3. ALL ROOF AND WIND ROOF ARE AS SH.
 4. ALL STRUCTURAL STEELS ARE AS O 3101 SEASO.
 5. ALL STAINLESS STEEL PLATES ARE AS O 304 OR 304 L.
- REFERENCE DRAWINGS :**
- FORMA, 100 X 100 SAND SUCTION DATE, DATE INSTALLATION

REFERENCE DRAWINGS :

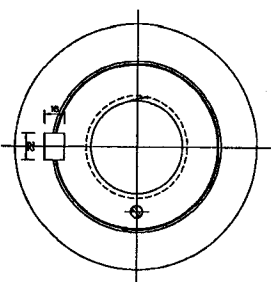
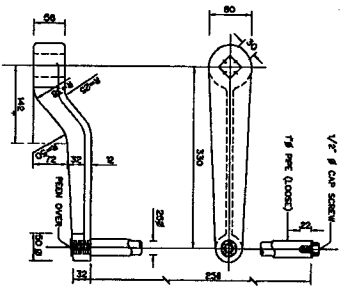
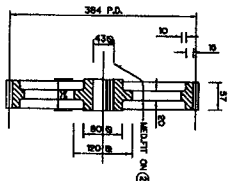
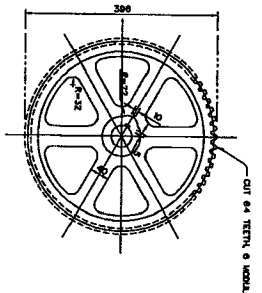
WMS-50-1

WMS-50-1

NO.	DATE	REMARKS	RECEIVED	APPROVED
1				
2				
3				

KINGDOM OF THAILAND MINISTRY OF ENERGY DEPARTMENT OF ALTERNATIVE ENERGY DEVELOPMENT AND EFFICIENCY		MAE HOING SON HYDROPOWER PROJECT	
CIVIL WORKS		FOREBAY	
1.00 x 1.00 M. SAND SLURRY CATE, DETAILS			
30000 (CONCRETE) C.B.I.B. ORDERED AND RECEIVED QUANTITY ORDERED 27/06/71 PROJECT NUMBER DATE		RECEIVED DEPARTMENT OF ALTERNATIVE ENERGY DEVELOPMENT AND EFFICIENCY QUANTITY RECEIVED 27/06/71 PROJECT NO. 17 OF 131	

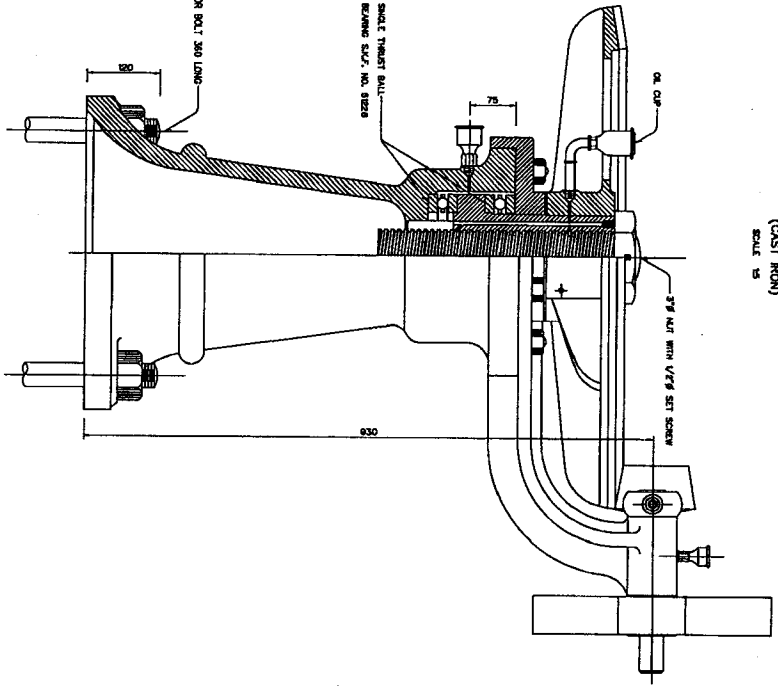
[illegible]



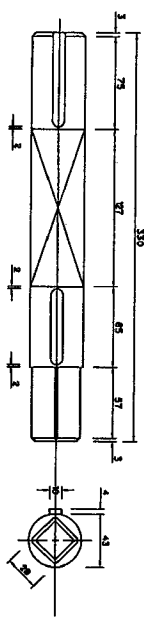
SPUR GEAR
(CAST IRON)
SCALE 1:1

HAND CRANK
(CAST IRON)
SCALE 1:1

LIFTING NUT
(PHOSPHOR BRONZE)
SCALE 1:1

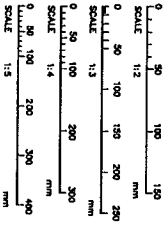


SPUR PINION SHAFT
(COLD ROLLED STEEL)
SCALE 1:1



BEVEL PINION SHAFT
(COLD ROLLED STEEL)
SCALE 1:1

ASSEMBLY
SCALE 1:1

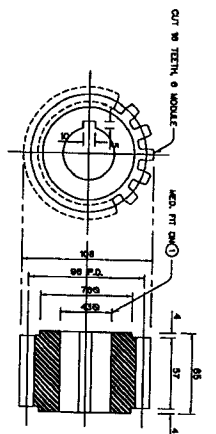


NOTES:

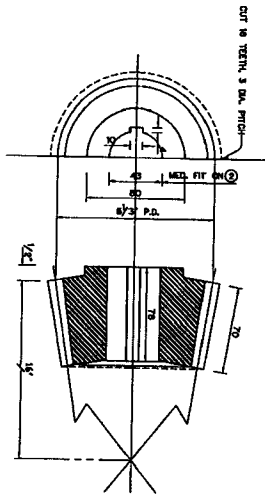
1. ALL DIMENSIONS AND ELEVATIONS (ASLT) ARE IN METERS, UNLESS OTHERWISE SHOWN
 2. SYMBOLS, ABBREVIATIONS AND GENERAL NOTES SEE DMS. NO. MHS-01-01
- REFERENCE DRAWINGS :-
1. FOREMAN, SECTIONS
 2. FOREMAN, GATE LIFT, CAPACITY 6.5 TONS (SHEET 2/2)

MINISTRY OF ENERGY
DEPARTMENT OF ALTERNATIVE ENERGY DEVELOPMENT AND EFFICIENCY
MAE HONG SON HYDROPOWER PROJECT
CIVIL WORKS
FOREMAN
GATE LIFT, CAPACITY 6.5 TONS

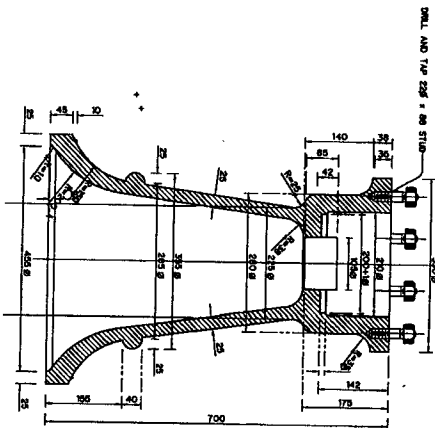
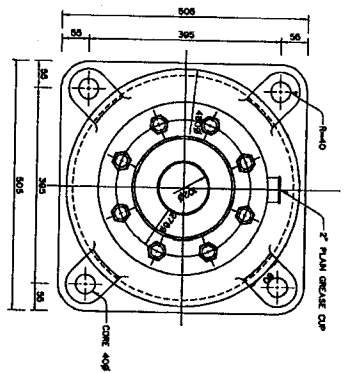
NO.	DATE	REVISIONS	CHANGED	APPROVED
1				
2				
3				



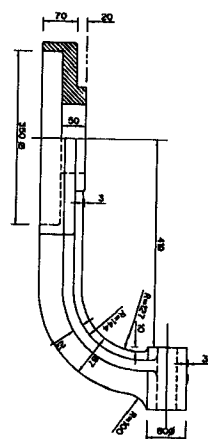
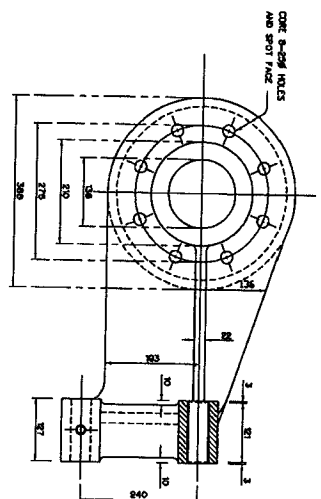
SPUR PINION
(CAST IRON)
SCALE 1:2



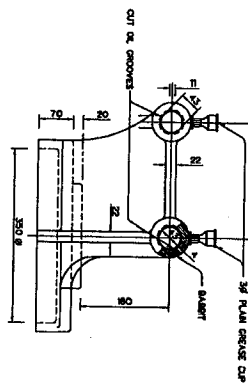
BEVEL PINION
(CAST IRON)
SCALE 1:2



PEDESTAL
(CAST IRON)
SCALE 1/8"



CAP AND BEARING
(CAST IRON)
SCALE 1:5



NOTES:

1. ALL DIMENSIONS AND ELEVATIONS (MILL) ARE IN METERS, UNLESS OTHERWISE SPECIFIED.
2. SYMBOLS, ABBREVIATIONS AND GENERAL NOTES SEE DWG. NO. WAB-04-01
- REFERENCE DRAWINGS :-
1. FORMER, GATE LIFT, CAPACITY 6.5 TONS (SHEET 1/2)

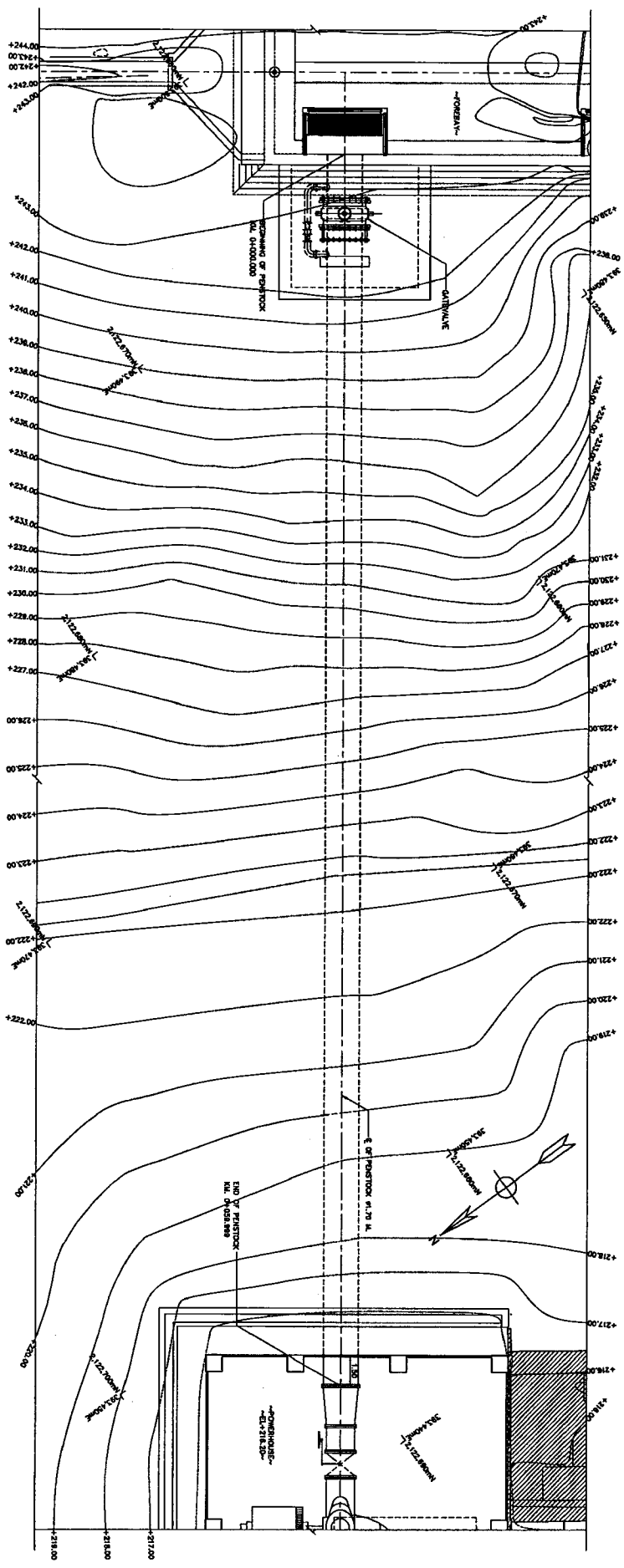
REFERENCE DRAWINGS :—

1. FOREMAN, GATE LIFT, CAPACITY 6.5 TONS (SHEET 1/2)

1. FOREMAN, GATE LIFT, CAPACITY 6.5 TONS (SHEET 1/2)

MA5-78-20

1		2		3		4		5		6		7		8		9		10		11		12		13		14		15		16		17		18		19		20		21		22		23		24		25		26		27		28		29		30		31		32		33		34		35		36		37		38		39		40		41		42		43		44		45		46		47		48		49		50		51		52		53		54		55		56		57		58		59		60		61		62		63		64		65		66		67		68		69		70		71		72		73		74		75		76		77		78		79		80		81		82		83		84		85		86		87		88		89		90		91		92		93		94		95		96		97		98		99		100	
1		2		3		4		5		6		7		8		9		10		11		12		13		14		15		16		17		18		19		20		21		22		23		24		25		26		27		28		29		30		31		32		33		34		35		36		37		38		39		40		41		42		43		44		45		46		47		48		49		50		51		52		53		54		55		56		57		58		59		60		61		62		63		64		65		66		67		68		69		70		71		72		73		74		75		76		77		78		79		80		81		82		83		84		85		86		87		88		89		90		91		92		93		94		95		96		97		98		99		100	
1		2		3		4		5		6		7		8		9		10		11		12		13		14		15		16		17		18		19		20		21		22		23		24		25		26		27		28		29		30		31		32		33		34		35		36		37		38		39		40		41		42		43		44		45		46		47		48		49		50		51		52		53		54		55		56		57		58		59		60		61		62		63		64		65		66		67		68		69		70		71		72		73		74		75		76		77		78		79		80		81		82		83		84		85		86		87		88		89		90		91		92		93		94		95		96		97		98		99		100	



- NOTES :
1. ALL DIMENSIONS AND ELEVATIONS (M.S.L.) ARE IN METERS.
 2. LATEST CHANGING DRAWING.
 3. SYMBOLS, ABREVIATIONS AND GENERAL NOTES SEE DWG. NO. MHS-PS-01
 4. ALLOWABLE EXCEED CAPACITY NOT LESS THAN 20 TON/M².

REFERENCE DRAWINGS :-

1. PENSTOCK PROFILE

MHS-PS-02



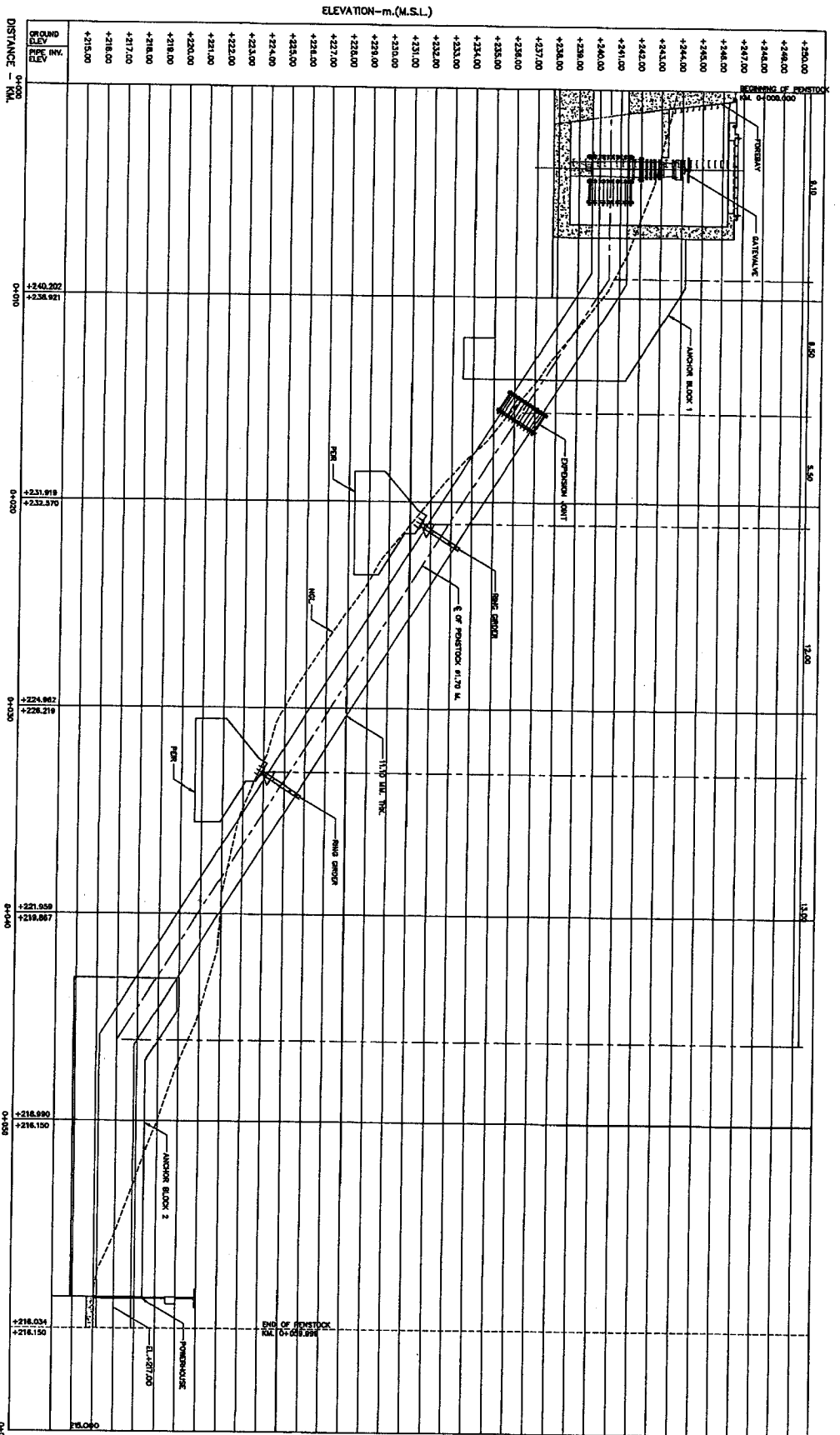
NO.	DATE	REVISIONS	CHECKED	APPROVED
1				
2				

DESIGNED BY	REVIEWED BY	DATE	PROJECT MANAGER
DRAWN BY	REVIEWED BY	DATE	
CHECKED BY	REVIEWED BY	DATE	
APPROVED BY	REVIEWED BY	DATE	

MINISTRY OF THAILAND
DEPARTMENT OF ENERGY
DEPARTMENT OF ALTERNATIVE ENERGY DEVELOPMENT AND EFFICIENCY
MAE HONG SON HYDROPOWER PROJECT
CIVIL WORKS
PENSTOCK
PLAN

DEPARTMENT OF ALTERNATIVE ENERGY DEVELOPMENT AND EFFICIENCY

MHS-PS-01
SHEET NO. 13



PROFILE
SCALE 1:100

- NOTES :
1. ALL DIMENSIONS AND ELEVATIONS (M.S.L.) ARE IN METERS.
 2. UNLESS OTHERWISE SHOWN.
 3. STATION, ABUTMENT AND GENERAL NOTES SEE PMS NO. MHS-01-01
 4. ALTERNATE BEARING CAPACITY NOT LESS THAN 20 TON/M²

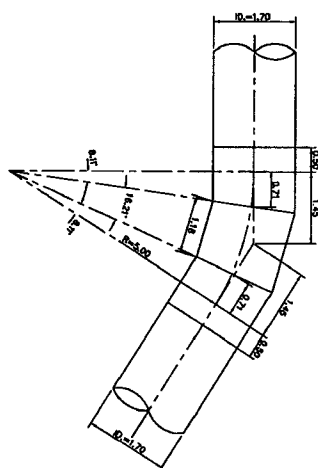
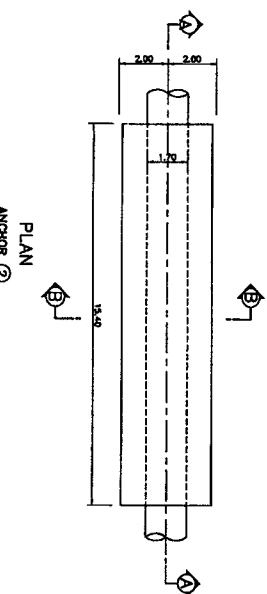
- REFERENCE DRAWINGS :
1. POSITION PLAN
 2. POSITION, ANCHOR BLOCK AND BED DETAILS
 3. POSITION, PIPE SUPPORT, PLAN, SECTIONS AND DETAILS

MHS-75-01
MHS-75-02
MHS-75-03
MHS-75-04

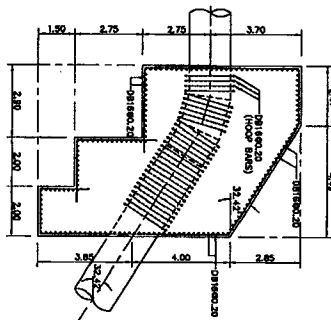
SCALE 1:100
METERS

NO.	DATE	REVISIONS	CHECKED	APPROVED
1				
2				
3				

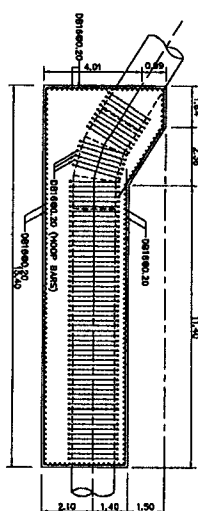
KINGDOM OF THAILAND MINISTRY OF ENERGY DEPARTMENT OF ALTERNATIVE ENERGY DEVELOPMENT AND EFFICIENCY MAE HONG SON HYDROPOWER PROJECT CIVIL WORKS PENSTOCK PROFILE		DESIGNED BY DRAWN BY CHECKED BY APPROVED BY PROJECT MANAGER	DESIGNED BY DRAWN BY CHECKED BY APPROVED BY PROJECT MANAGER
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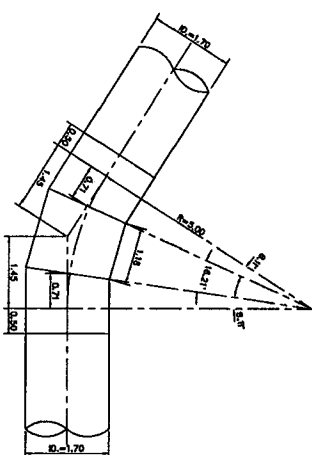
BEND DETAIL
ANCHOR ①
SCALE 1:50



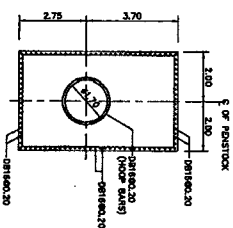
SECTION A-
ANCHOR ①
SCALE 1:100



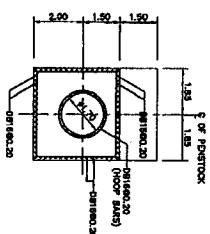
SECTION A-A
ANCHOR ②
SCALE 1:100



BEND DETAIL
ANCHOR ②
SCALE 1:50



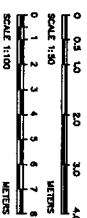
SECTION B-
ANCHOR ①
SCALE 1:100



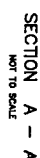
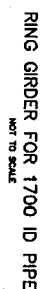
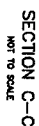
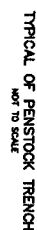
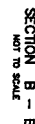
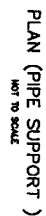
SECTION B-B
ANCHOR ②
SCALE 1:100

- NOTES :
1. ALL DIMENSIONS AND ELEVATIONS (A.S.L.) ARE IN METERS, UNLESS OTHERWISE SHOWN.
 2. SYMBOLS, ABBREVIATIONS AND GENERAL NOTES SEE DWG. NO. GC-DR-01.
 3. ALLOWABLE BEARING CAPACITY NOT LESS THAN 20 TON/M²

- REFERENCE DRAWINGS :
- | | |
|--|-----------|
| 1. PENSTOCK PROFILE | MIS-PS-02 |
| 2. PENSTOCK PIPE SUPPORT, PLAN, SECTIONS AND DETAILS | MIS-PS-04 |
| 3. PENSTOCK WELDING DETAILS | MIS-PS-03 |

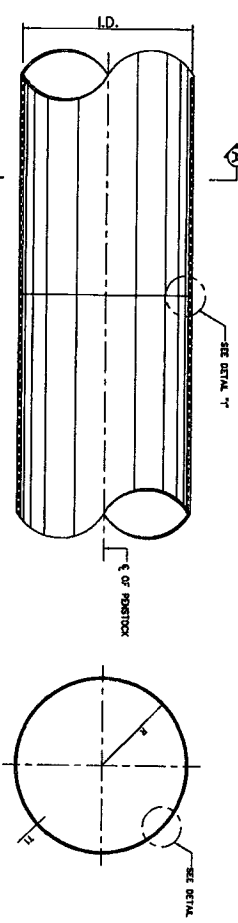


KINGDOM OF THAILAND MINISTRY OF ENERGY DEPARTMENT OF ALTERNATIVE ENERGY DEVELOPMENT AND EFFICIENCY			
MAE HONG SON HYDROPOWER PROJECT CIVIL WORKS PENSTOCK ANCHOR BLOCK AND BEND DETAILS			
NO. 5 5 5		DESIGNED BY: <i>SAIT</i> DRAWN: <i>SAIT</i> DATE: <i>27/09/71</i> CHECKED: <i>SAIT</i> PROJECT NUMBER: <i>WHS-PS-03</i>	
REVISIONS NO. DATE COMMENTS		RECOMMENDED BY: <i>SAIT</i> APPROVED: <i>SAIT</i> DATE: <i>27/09/71</i> DRAWING NO. <i>WHS-PS-03</i>	
APPROVED		SHEET NO. <i>01 OF 131</i>	



- WHS-P 5-02
WHS-P 5-03
WHS-P 5-05

MINISTRY OF THAILAND MINISTRY OF ENERGY DEPARTMENT OF ALTERNATIVE ENERGY DEVELOPMENT AND EFFICIENCY MAE HONG SON HYDROPOWER PROJECT CIVIL WORKS PENSTOCK		DEPARTMENT OF ALTERNATIVE ENERGY DEVELOPMENT AND EFFICIENCY	
RECEIVED DATE 27/06/71 BY <i>[Signature]</i>	RECEIVED DATE 27/06/71 BY <i>[Signature]</i>	RECEIVED DATE 27/06/71 BY <i>[Signature]</i>	RECEIVED DATE 27/06/71 BY <i>[Signature]</i>



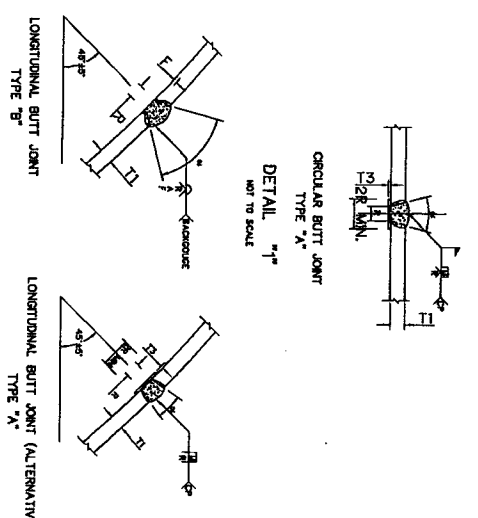
ELEVATION
NOT TO SCALE

SECTION A-A
NOT TO SCALE

WELDING PROCESS	JOINT DESCRIPTION	BASE METAL THICKNESS (t= UNLIMITED)		GROOVE PREPARATION		ALLOWED WELDING POSITIONS FOR FLAW	GAS SHIELDING FOR FLAW	REMARK	TOLERANCES	
		T1	T2	ROOT OPENING	GROOVE ANGLE				AS DETAIL	AS FIT-UP
SAW	B-12a	U	U	R = 6	± 45°	ALL	-	4)		
SAW	B-12b	U	U	R = 6	± 30°	F/JOH	-	4)		
SAW	B-12c	U	U	R = 6	± 30°	F/JOH	-	4)		
SAW	B-12d	U	U	R = 6	± 30°	F/JOH	-	4)		
SAW	B-12e	U	U	R = 6	± 30°	F/JOH	-	4)		
SAW	B-12f	U	U	R = 6	± 30°	F/JOH	-	4)		
SAW	B-12g	U	U	R = 6	± 30°	F/JOH	-	4)		
SAW	B-12h	U	U	R = 6	± 30°	F/JOH	-	4)		
SAW	B-12i	U	U	R = 6	± 30°	F/JOH	-	4)		
SAW	B-12j	U	U	R = 6	± 30°	F/JOH	-	4)		

TABLE OF TYPE "B" SINGLE-V-GROOVE WELD, BUTT JOINT

WELDING PROCESS	JOINT DESCRIPTION	BASE METAL THICKNESS (t= UNLIMITED)		GROOVE PREPARATION		ALLOWED WELDING POSITIONS FOR FLAW	GAS SHIELDING FOR FLAW	REMARK
		T1	T2	ROOT OPENING	GROOVE ANGLE			
SAW	B-12a	U	U	R = 0-3	± 45°	ALL	-	4)
SAW	B-12b	U	U	R = 0-3	± 45°	ALL	-	4)
SAW	B-12c	U	U	R = 0-3	± 45°	ALL	-	4)
SAW	B-12d	U	U	R = 0-3	± 45°	ALL	-	4)
SAW	B-12e	U	U	R = 0-3	± 45°	ALL	-	4)
SAW	B-12f	U	U	R = 0-3	± 45°	ALL	-	4)
SAW	B-12g	U	U	R = 0-3	± 45°	ALL	-	4)
SAW	B-12h	U	U	R = 0-3	± 45°	ALL	-	4)
SAW	B-12i	U	U	R = 0-3	± 45°	ALL	-	4)
SAW	B-12j	U	U	R = 0-3	± 45°	ALL	-	4)



CIRCULAR BUTT JOINT
TYPE "A"
DETAIL "A"
NOT TO SCALE

LONGITUDINAL BUTT JOINT
TYPE "B"
DETAIL "B"
NOT TO SCALE

REMARKS:

- NOT PREPARED FOR GMAW-4 NON CHW.
- SHOULDER ROOT TO SHOLD METAL, BEFORE WELDING SECOND SIDE.
- SAW DETAIL JOINTS MAY BE USED FOR PREPARED GMAW (EXCEPT GMAW-4) AND FLAW.
- THE OPERATION OF THE TWO MEMBERS IN THE JOINTS MAY VARY FROM TOP TO BOTTOM FOR BUTT JOINTS, OR 45° TO 90° FOR CORNER JOINTS, OR 45° TO 90° FOR T-JOINTS.

LEGENDS:

WELDING PROCESSES

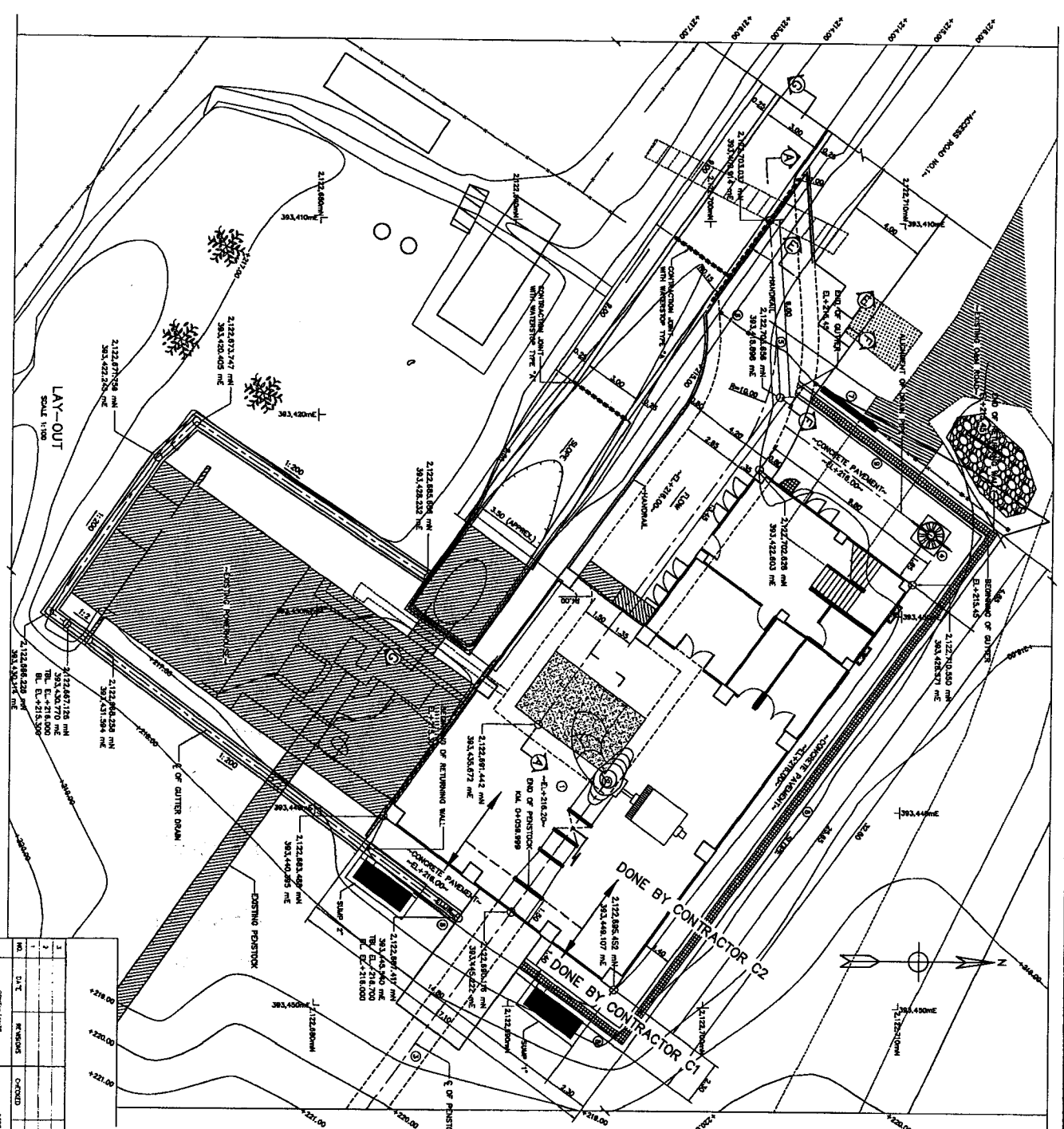
SAW = SHIELD METAL ARC WELDING
GMAW = GAS METAL ARC WELDING
FLAW = FLAME CORRO AND WELDING
ON = OVERHEAD

WELDING POSITIONS

F = FLAT
H = HORIZONTAL
V = VERTICAL
OH = OVERHEAD

WELDING SYMBOLS	WELDING SYMBOLS	WELDING SYMBOLS	WELDING SYMBOLS	WELDING SYMBOLS	WELDING SYMBOLS	WELDING SYMBOLS	WELDING SYMBOLS	WELDING SYMBOLS	WELDING SYMBOLS
WELDED SYMBOL	WELDED SYMBOL	WELDED SYMBOL	WELDED SYMBOL	WELDED SYMBOL	WELDED SYMBOL	WELDED SYMBOL	WELDED SYMBOL	WELDED SYMBOL	WELDED SYMBOL
WELD - ALL -	WELD - ALL -	WELD - ALL -	WELD - ALL -	WELD - ALL -	WELD - ALL -	WELD - ALL -	WELD - ALL -	WELD - ALL -	WELD - ALL -
WELDING SYMBOL	WELDING SYMBOL	WELDING SYMBOL	WELDING SYMBOL	WELDING SYMBOL	WELDING SYMBOL	WELDING SYMBOL	WELDING SYMBOL	WELDING SYMBOL	WELDING SYMBOL
WELDING SYMBOL	WELDING SYMBOL	WELDING SYMBOL	WELDING SYMBOL	WELDING SYMBOL	WELDING SYMBOL	WELDING SYMBOL	WELDING SYMBOL	WELDING SYMBOL	WELDING SYMBOL
WELDING SYMBOL	WELDING SYMBOL	WELDING SYMBOL	WELDING SYMBOL	WELDING SYMBOL	WELDING SYMBOL	WELDING SYMBOL	WELDING SYMBOL	WELDING SYMBOL	WELDING SYMBOL
WELDING SYMBOL	WELDING SYMBOL	WELDING SYMBOL	WELDING SYMBOL	WELDING SYMBOL	WELDING SYMBOL	WELDING SYMBOL	WELDING SYMBOL	WELDING SYMBOL	WELDING SYMBOL
WELDING SYMBOL	WELDING SYMBOL	WELDING SYMBOL	WELDING SYMBOL	WELDING SYMBOL	WELDING SYMBOL	WELDING SYMBOL	WELDING SYMBOL	WELDING SYMBOL	WELDING SYMBOL
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KINGDOM OF THAILAND		MINISTRY OF ENERGY		DEPARTMENT OF ALTERNATIVE ENERGY DEVELOPMENT AND EFFICIENCY	
MAE HONG SON HYDROPOWER PROJECT		CIVIL WORKS		WELDING DETAILS	
PENSUOK		WELDING DETAILS		DEPARTMENT OF ALTERNATIVE ENERGY	
DESIGNED BY: [Signature]		CHECKED BY: [Signature]		APPROVED BY: [Signature]	
DATE: 27/02/12		DATE: 27/02/12		DATE: 27/02/12	
NO. 1		NO. 2		NO. 3	
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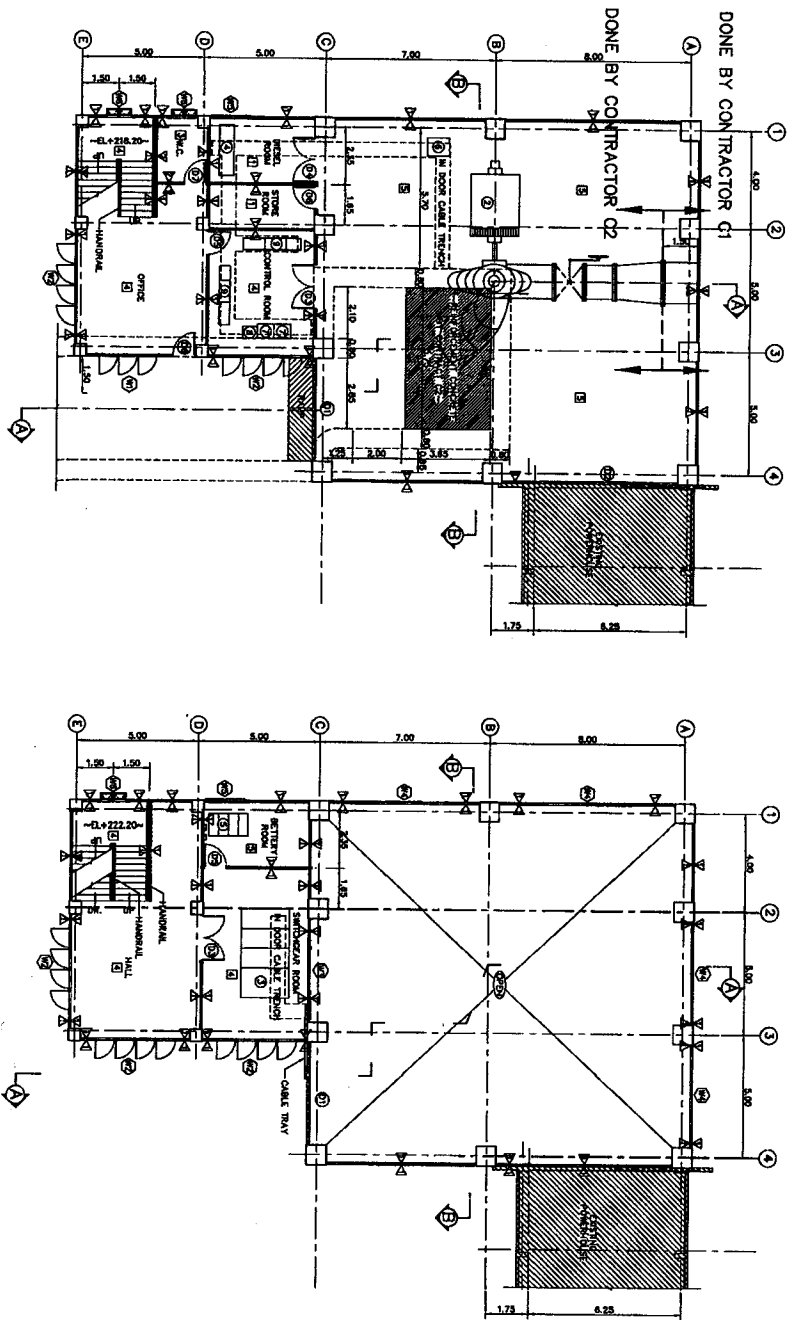
- NOTES :
1. ALL DIMENSIONS AND ELEVATIONS (M.S.L.) ARE IN METERS, UNLESS OTHERWISE SHOWN.
 2. STRUCTURE DIMENSIONS AND GENERAL NOTES SEE DWG. NO. MHS-CH-01

- REFERENCE DRAWINGS :
1. POWERHOUSE, PLANS (SHEET 1/2)
 2. POWERHOUSE, PLANS (SHEET 2/2)
 3. POWERHOUSE, SECTIONS AND DETAILS
 4. POWERHOUSE, INSTALLATIONS DETAILS
 5. POWERHOUSE, CHAIR LIFT RIGGE AND GATE WITH 1:00 M.
 6. POWERHOUSE, REPAIR/REPAIR DETAIL (SHEET 1/5)
 7. POWERHOUSE, WATER SUPPLY PROFILE SYSTEM LAY-OUT AND DETAILS

- LEGENDS :
- ① POWERHOUSE
 - ② HORIZONTAL SHAFT FRANCIS TURBINE
 - ③ PENSTOCK
 - ④ BEDROCK TANK
 - ⑤ GATE
 - ⑥ CHAIR LIFT RIGGE
 - ⑦ SHEDDING
 - ⑧ RETURNING WALL
 - ⑨ DUTTER
 - EXISTING STRUCTURE



KINGDOM OF THAILAND MINISTRY OF ENERGY DEPARTMENT OF ALTERNATIVE ENERGY DEVELOPMENT AND EFFICIENCY MAE HONG SON HYDROPOWER PROJECT CIVIL WORKS POWERHOUSE LAY-OUT		DEPARTMENT OF ALTERNATIVE ENERGY DEVELOPMENT AND EFFICIENCY REVIEWED DESIGNED DRAWN CHECKED APPROVED DATE: 27/09/13 PROJECT NUMBER: MHS-PH-01 SHEET NO. 61 OF 131
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GROUND FLOOR PLAN (EL.+216.20)
SCALE 1:100

SECOND FLOOR PLAN (EL.+220.20)
SCALE 1:100

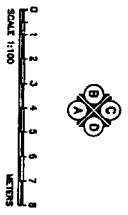
- REFERENCE DRAWINGS :
1. POWERHOUSE, LAY-OUT
 2. POWERHOUSE, PLANS SHEET 2/21
 3. POWERHOUSE, ELEVATIONS
 4. POWERHOUSE, DETAILS OF TOILET, SEPTIC AND SEWAGE TANK
 5. POWERHOUSE, DETAILS OF TOILET, SEPTIC AND SEWAGE TANK
 6. POWERHOUSE, DETAILS OF DOORS, WINDOWS AND SHROUDED
 7. POWERHOUSE, KEY PLANS
 8. POWERHOUSE, CABLE TRENCH AND CABLE TRAY DETAILS
 9. POWERHOUSE, MISCELLANEOUS DETAILS

MHS-PH-01
MHS-PH-02
MHS-PH-03
MHS-PH-04
MHS-PH-05
MHS-PH-06
MHS-PH-07
MHS-PH-08
MHS-PH-09
MHS-PH-10

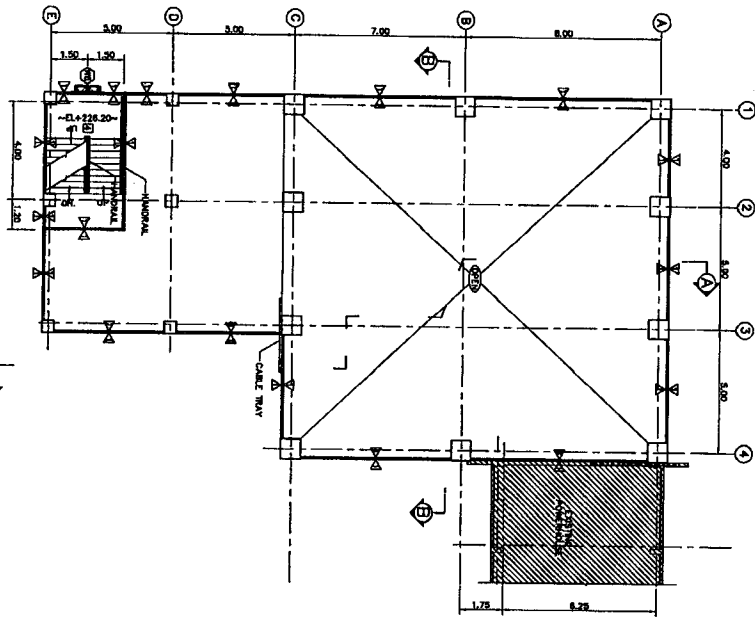
11. POWERHOUSE, MECHANICAL DETAILS SHEET 1/41
12. POWERHOUSE, POWER ELECTRIC AND LIGHTING SYSTEMS SHEET 1/41
13. POWERHOUSE, POWER ELECTRIC AND LIGHTING SYSTEMS SHEET 2/41
14. POWERHOUSE, POWER ELECTRIC AND LIGHTING SYSTEMS SHEET 3/41
15. POWERHOUSE, POWER ELECTRIC AND LIGHTING SYSTEMS SHEET 4/41

MHS-PH-11
MHS-PH-12
MHS-PH-13
MHS-PH-14
MHS-PH-15

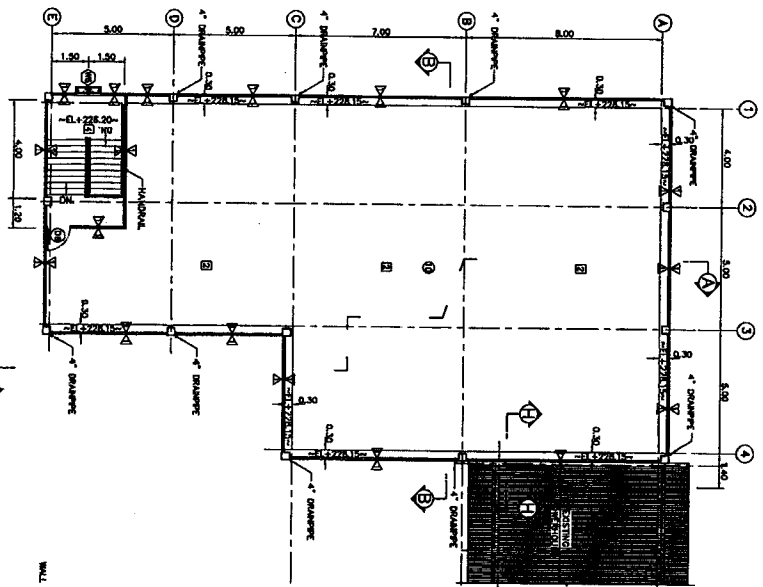
- DESCRIPTIONS :
- ① HORIZONTAL SHAFT FRAMES TURBINE
 - ② GENERATOR
 - ③ SWITCH GEAR CASINGS
 - ④ DIESEL GENERATOR SET
 - ⑤ BATTERY AND BACK
 - ⑥ DC PRESSURE TANK
 - ⑦ AC AND DC SWITCHBOARD AND
 - ⑧ TURBINE-GENERATOR BOARD
 - ⑨ MAIN CONTROL SWITCHBOARD
 - ⑩ BATTERY CHARGER CIRCUIT
 - ⑪ SWITCHBOARD (NOT SHOWN)
- WALL FINISH SYMBOLS :
- △ PLASTERING W/P/PAINT
 - ▲ 6"X6" CERAMIC TILES
- FLOOR FINISH SYMBOLS :
- CONCRETE FINISH
 - COARSE FINISH W/ WATERPROOF MEMBRANE
 - 6"X6" NEW 8"X8" CERAMIC FLOOR TILES
 - 6"X6" CERAMIC FLOOR TILES
 - ACID PROOF FLOOR
- CELLINGS :
- OFFICE, CONTROL ROOM, DIESEL ROOM AND STORAGE ROOM
 - PLASTERING W/P/PAINT
 - SWITCHGEAR ROOM, BATTERY ROOM AND HALL
 - 9 mm thick gypsum board with STEEL FRAME W/P/PAINT
 - 9 mm thick gypsum board with T-BAR GRID SUSPENDED
- NOTES :
1. ALL DIMENSIONS AND ELEVATIONS (A.S.L.) ARE IN METERS, UNLESS OTHERWISE SHOWN.
 2. SYMBOLS, ABBREVIATIONS AND GENERAL NOTES SEE DWG. NO. MHS-01-01.
 3. AS FOR THE EXISTING AND NEW POWERHOUSE, THE CONTRACTOR SHALL MAKE THEM WALLS CLOSE TO EACH OTHER AS MUCH AS POSSIBLE ON SHALL BUILD THE WALL OF THE NEW POWERHOUSE TO CONNECT TO THE WALL OF THE EXISTING STRUCTURE. THE JAWNT BETWEEN THE TWO POWERHOUSES WILL BE A GROUND FILL WITH SLOPES.



KINGDOM OF THAILAND		MINISTRY OF ENERGY	
DEPARTMENT OF ALTERNATIVE ENERGY DEVELOPMENT AND EFFICIENCY		MAE HONG SON HYDROPOWER PROJECT	
CIVIL WORKS		POWERHOUSE	
PLANS		DEPARTMENT OF ALTERNATIVE ENERGY DEVELOPMENT AND EFFICIENCY	
DESIGNED BY	DR. MAE HONG SON	CHECKED BY	DR. MAE HONG SON
DRAWN BY	DR. MAE HONG SON	APPROVED BY	DR. MAE HONG SON
DATE	21/05/13	DATE	21/05/13
CONTRACT NO.	MHS-PH-02	PROJECT NO.	MHS-PH-02
SHEET NUMBER		SHEET 1/21	

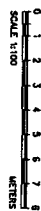


THIRD FLOOR PLAN (EL.+224.20)
SCALE 1:100



ROOF DECK PLAN (EL.+228.20)
SCALE 1:100

SECTION H-H
SCALE 1:20



- REFERENCE DRAWINGS :
1. POWERHOUSE, LAY-OUT
 2. POWERHOUSE, PLANS SHEET 1/20
 3. POWERHOUSE, ELEVATIONS
 4. POWERHOUSE, SECTIONS AND DETAIL
 5. POWERHOUSE, DETAILS OF DOORS, WINDOWS AND SHROUDD
 6. POWERHOUSE, KEY PLAN
 7. POWERHOUSE, KEY PLAN AND SLAB REINFORCEMENT DETAILS
 8. POWERHOUSE, CABLE TRINCH AND CABLE TRAY DETAILS
 9. POWERHOUSE, MISCELLANEOUS DETAILS

- USE-PH-01
USE-PH-02
USE-PH-03
USE-PH-04
USE-PH-05
USE-PH-06
USE-PH-07
USE-PH-08
USE-PH-09
USE-PH-10
USE-PH-11
USE-PH-12

10. POWERHOUSE, REINFORCEMENT DETAILS SHEET 3/40
11. POWERHOUSE, POWER ELECTRIC AND LIGHTING SYSTEM SHEET 4/40
12. POWERHOUSE, POWER ELECTRIC AND LIGHTING SYSTEM SHEET 4/40
13. POWERHOUSE, POWER ELECTRIC AND LIGHTING SYSTEM SHEET 4/40
14. POWERHOUSE, GROUNDS SYSTEM

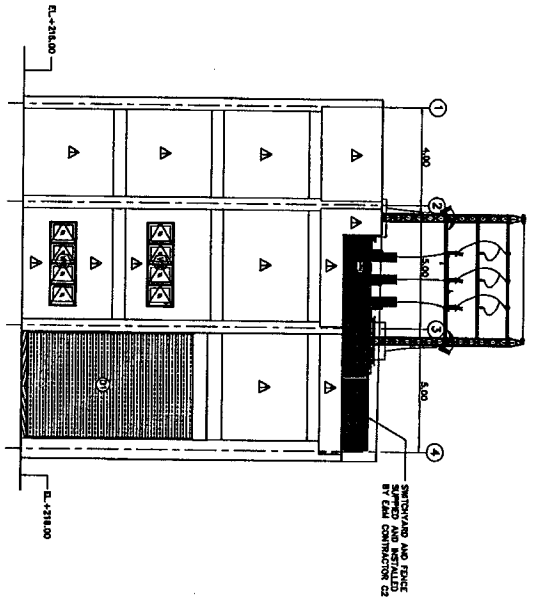
- USE-PH-13
USE-PH-14
USE-PH-15
USE-PH-16
USE-PH-17
USE-PH-18
USE-PH-19
USE-PH-20

- DESCRIPTIONS :
- ① HORIZONTAL SHAFT TRANCE TUBING
 - ② GENERATOR
 - ③ SWITCH GEAR CABLES
 - ④ BROWN GENERATOR SET
 - ⑤ BATTERY AND ROCK
 - ⑥ OIL PRESSURE TANK
 - ⑦ AC AND DC SWITCHBOARD AND
 - ⑧ TURBINE-GENERATOR BOARD
 - ⑨ MAIN CONTROL SWITCHBOARD
 - ⑩ BATTERY CHARGER CABLE
 - ⑪ SWITCHBOARD (NOT SHOWN)

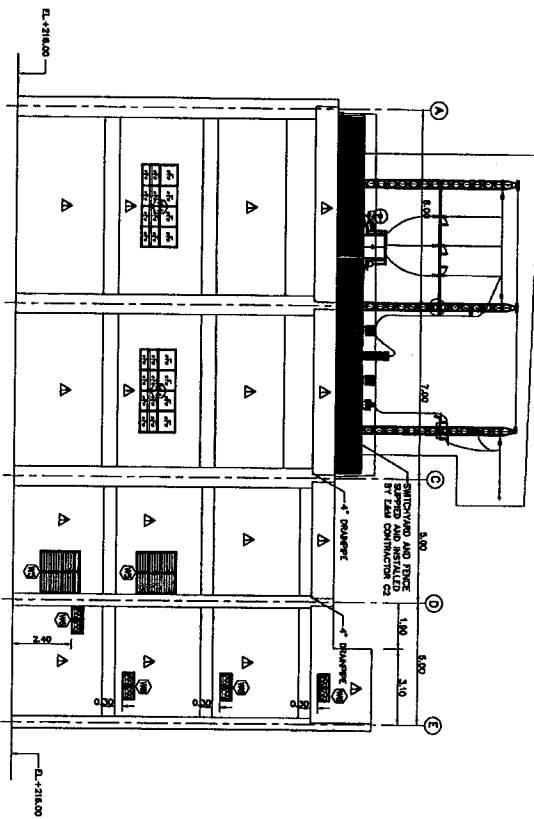
- WALL FINISH SYMBOLS :
- △ PLASTERING W/PAINT
▲ 8"X8" CERAMIC TILES
- FLOOR FINISH SYMBOLS :
- COARSE FINEWOOD
□ COARSE FINEWOOD W/ INTERLOCKED HORIZONTAL
□ 6"X6" NON-SIP CERAMIC FLOOR TILES
□ 8"X8" CERAMIC FLOOR TILES
□ ADD PROOF EVERY

- NOTES :
1. ALL DIMENSIONS AND ELEVATIONS (A.S.L.) ARE IN METERS, UNLESS OTHERWISE SHOWN.
 2. SYMBOLS, ABBREVIATIONS AND GENERAL NOTES SEE DWG. NO. MHS-01-01.
 3. AS FOR THE EXISTING AND NEW POWERHOUSE, THE CONTRACTOR SHALL MAKE THEM WALLS CLOSE TO EACH OTHER AS MUCH AS POSSIBLE ON WALL BUILD.
 4. THE WALL OF THE NEW POWERHOUSE TO CONNECT TO THE WALL OF THE EXISTING STRUCTURE.
 5. THE JOINT BETWEEN THE TWO POWERHOUSES WILL BE A GROOVE FILLED WITH SLOTTING.

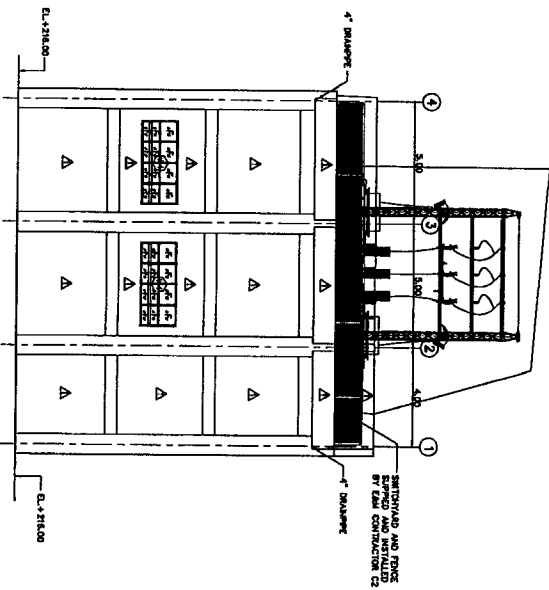
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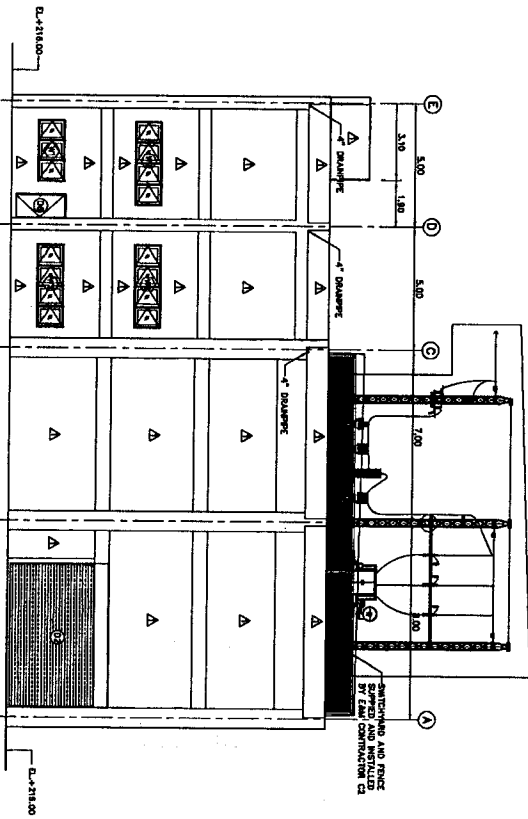
ELEVATION "A"
SCALE 1:100



ELEVATION "B"
SCALE 1:100



ELEVATION "C"
SCALE 1:100



ELEVATION "D"
SCALE 1:100

NOTES:

1. ALL DIMENSIONS AND ELEVATIONS (ASLT.) ARE IN METERS, UNLESS OTHERWISE SHOWN.
2. STANDARD ABBREVIATIONS AND GENERAL NOTES SEE DWG. NO. M&S-04-01.

REFERENCE DRAWINGS:

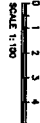
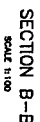
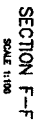
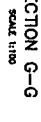
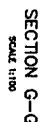
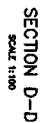
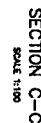
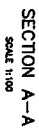
1. POWERHOUSE, PLANS SHEET 1/21
2. POWERHOUSE, PLANS SHEET 2/21
3. POWERHOUSE, DETAILS OF DOORS, WINDOWS AND SHEDDING

M&S-04-02
M&S-04-03
M&S-04-07



NO.	DATE	REVISION	BY	CHKD	APPD
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2					
3					

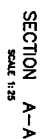
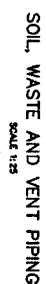
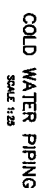
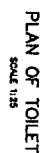
KINGDOM OF THAILAND		MINISTRY OF ENERGY	
DEPARTMENT OF ALTERNATIVE ENERGY DEVELOPMENT AND EFFICIENCY		MAE HONG SON HYDROPOWER PROJECT	
CIVIL WORKS		POWERHOUSE	
ELEVATIONS		DEPARTMENT OF ALTERNATIVE ENERGY	
DESIGNED BY: MAE HONG SON		CHECKED BY: MAE HONG SON	
DATE: 27/05/73		APPROVED BY: MAE HONG SON	
PROJECT MANAGER: MAE HONG SON		SHEET NO. 1/11	



- | | |
|-----------|--|
| MAE-PH-01 | KINGDOM OF THAILAND
MINISTRY OF ENERGY
DEPARTMENT OF ALTERNATIVE ENERGY DEVELOPMENT AND EFFICIENCY

MAE HONG SON HYDROPOWER PROJECT |
| MAE-PH-02 | |
| MAE-PH-03 | |
| MAE-PH-07 | |
| MAE-PH-17 | |
| MAE-PH-18 | |
| | |
| | CIVIL WORKS
POWERHOUSE
SECTIONS AND DETAIL |

[illegible]



- NOTES :
1. ALL DIMENSIONS AND ELEVATIONS (H.S.L.) ARE IN METERS.
REINFORCEMENT BARS ARE IN MILLIMETERS, UNLESS OTHERWISE SHOWN.
2. SYMBOLS, ABBREVIATIONS AND GENERAL NOTES SEE DRAW NO. MHS-04-01.

- REFERENCE DRAWINGS :**

1. PONDHOUSE PLANS (SHEET 1/2)
2. PONDHOUSE DETAILS OF DOORS, WINDOWS AND SIGNBOARD

3			
2			
1			
NO.	DATE	REVISIONS	CHECKED
CONSULTANTS		DATE	

KINGDOM OF THAILAND MINISTRY OF ENERGY DEPARTMENT OF ALTERNATIVE ENERGY DEVELOPMENT AND EFFICIENCY		MAE HONG SON HYDROPOWER PROJECT CIVIL WORKS POWERHOUSE	
DEPARTMENT OF ALTERNATIVE ENERGY DEVELOPMENT AND EFFICIENCY		DETAILS OF TOILET, SEPTIC AND SEWAGE TANK	
DRAWING NO. <u>101-1</u> SCALE <u>1/20</u> DATE <u>27/07/00</u> PROJECT MANAGER <u>DR</u> DRAWING NO. <u>101-1</u> SCALE <u>1/20</u> DATE <u>27/07/00</u> PROJECT MANAGER <u>DR</u>		DESIGNER <u>DR</u> CHECKED <u>DR</u> APPROVED <u>DR</u> RECOMMENDED <u>DR</u> DRAWING NO. <u>101-1</u> SCALE <u>1/20</u> DATE <u>27/07/00</u> PROJECT MANAGER <u>DR</u>	

5.80

SHUTTER BOX

FLOOR LEVEL

3.50

SHUTTER BOX

FLOOR LEVEL

1.80

2.00

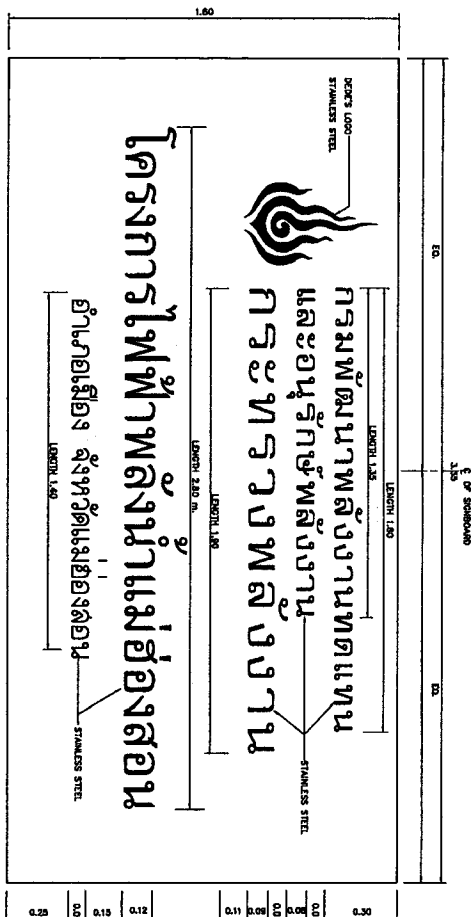
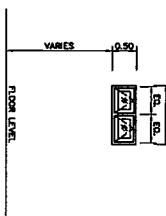
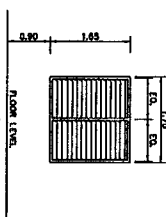
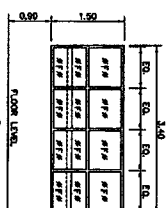
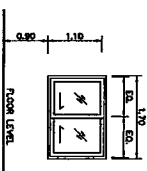
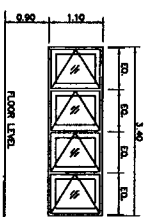
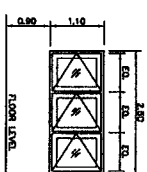
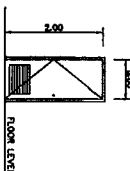
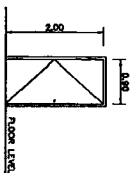
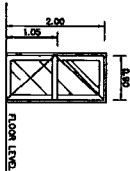
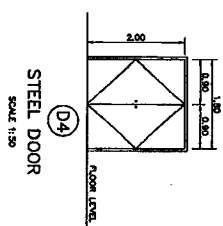
1.00

0.80

0.80

FLOOR LEVEL

SYMBOL	DESCRIPTIONS	WIDTH	HEIGHT	FRAME	PAV. & STILE	PANEL	HINGE	LOCKSET	HANDLE	REMARKS
(B1)	MOLLE SPLITTER DOOR (STEEL 1.5 mm THK)	4.50	6.00	GLAZED STEEL	—	—	—	MODULAR KEY	—	W/OTN OPERATING
(B2)	MOLLE SPLITTER DOOR (STEEL 1.5 mm THK)	5.65	3.50	GLAZED STEEL	—	—	—	MODULAR KEY	—	W/OTN OPERATING
(B3)	GLASS DOOR	1.80	2.00	STEEL 1.5 mm THK	—	GLASS 8 mm THK	●	●	●	PAV. SET OF ACCESSORIES FROM MANUFACTURER
(B4)	STEEL DOOR	1.80	2.00	STEEL	—	STEEL	●	●	●	PAV. SET OF ACCESSORIES FROM MANUFACTURER
(B5)	GLASS DOOR	0.80	2.00	ALUMINUM STEEL 1.5 mm THK	—	GLASS 8 mm THK	●	●	●	PAV. SET OF ACCESSORIES FROM MANUFACTURER
(B6)	STEEL DOOR	0.80	2.00	STEEL 1.5 mm THK	—	STEEL	●	●	●	PAV. SET OF ACCESSORIES FROM MANUFACTURER
(B7)	PVC DOOR	0.80	2.00	P.V.C. 2.5 mm	—	P.V.C.	●	●	●	STAINLESS STEEL 4.50 ALUMINUM CHINGER LOOK
(B8)	OPENING WINDOW	2.50	1.10	ALUMINUM STEEL 1.5 mm THK	GLAZED STEEL	GLASS 8 mm THK	●	●	●	PAV. SET OF ACCESSORIES FROM MANUFACTURER
(B9)	OPENING WINDOW	3.40	1.10	ALUMINUM STEEL 1.5 mm THK	GLAZED STEEL	GLASS 8 mm THK	●	●	●	PAV. SET OF ACCESSORIES FROM MANUFACTURER
(B10)	SLIDING WINDOW	1.10	1.10	ALUMINUM STEEL 1.5 mm THK	—	GLASS 8 mm THK	●	●	●	PAV. SET OF ACCESSORIES FROM MANUFACTURER
(B11)	FIXED GLASS WINDOW	3.40	1.50	ALUMINUM STEEL 1.5 mm THK	—	GLASS 8 mm THK	—	—	—	PAV. SET OF ACCESSORIES FROM MANUFACTURER
(B12)	UPPER WINDOW	1.10	1.45	ALUMINUM STEEL 1.5 mm THK	—	ALUMINUM 1.5 mm THK	—	—	—	PAV. SET OF ACCESSORIES FROM MANUFACTURER
(B13)	OPENING GLASS WINDOW	1.20	0.90	ALUMINUM STEEL 1.5 mm THK	—	GLASS 8 mm THK	●	●	●	PAV. SET OF ACCESSORIES FROM MANUFACTURER



3			
2			
1			
NO.	DATE	REVISIONS	CHECKED APPROPRIATED
CONSULTANTS		FIRM	

MINISTRY OF THAILAND MINISTRY OF ENERGY DEPARTMENT OF ALTERNATIVE ENERGY DEVELOPMENT AND EFFICIENCY		MAE HONG SON HYDROPOWER PROJECT	
CIVIL WORKS		POWERHOUSE	
DETAILS OF DOORS, WINDOWS AND SIGNBOARD			
DISCLOSED ☒ YES ☐ NO REVIEWED ☒ YES ☐ NO APPROVED ☒ YES ☐ NO DATE: 27/6/11	NO FURTHER COMMENTARY TO BE MADE	RECOMMENDED ☒ YES ☐ NO APPROVED ☒ YES ☐ NO DATE: 27/6/11	DEPARTMENT OF ALTERNATIVE ENERGY DEVELOPMENT AND EFFICIENCY

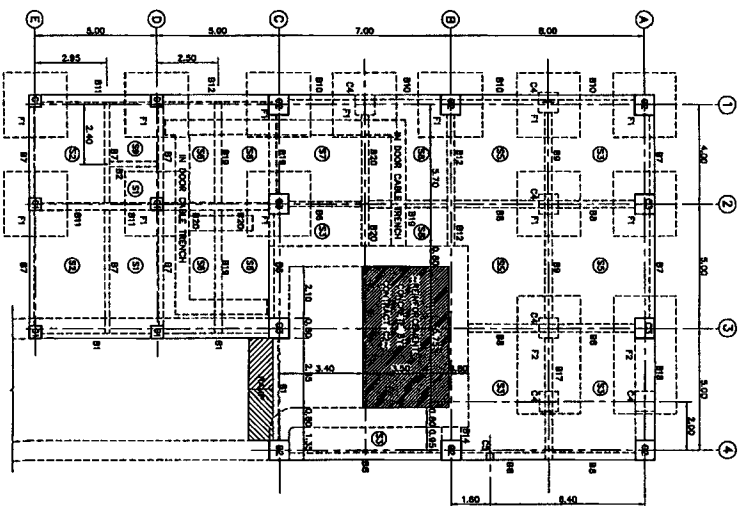
NOTES:

1. ALL DIMENSIONS AND ELEVATIONS (E.A.L.) ARE IN METERS. UNLESS OTHERWISE SPECIFIED.
2. FINISHES, CONNECTIONS AND GENERAL NOTES SEE DWG. NO. HRS-01-01.

REFERENCE DRAWINGS :

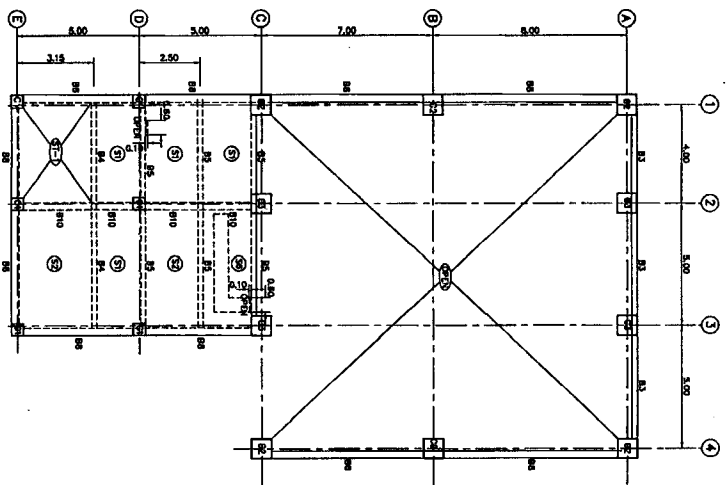
1. POTERHOUSE, PLANS SHEET 1/23
2. POTERHOUSE, PLANS SHEET 2/23
3. POTERHOUSE, ELEVATIONS
4. POTERHOUSE, SECTIONS
5. POTERHOUSE, DETAILS OF TOILET, BATH AND STEAM TANK

KINGDOM OF THAILAND
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MAE HONG SON HYDROPOWER PROJECT
CIVIL WORKS
POWERHOUSE
DETAILS OF DOORS, WINDOWS AND SIGNBOARD



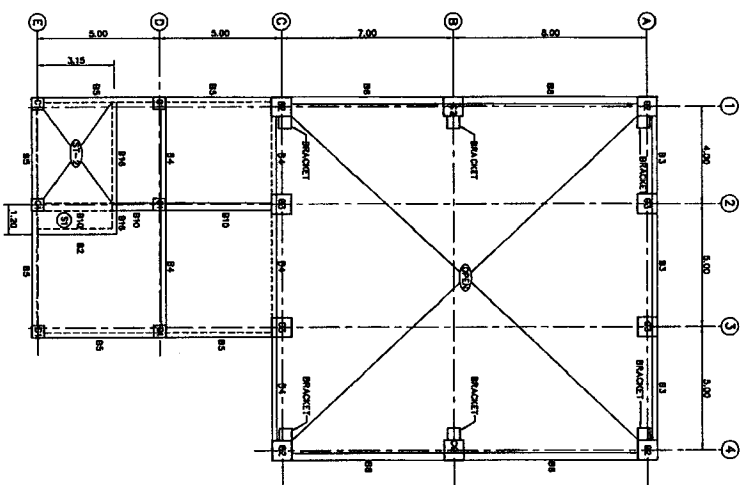
GROUND FLOOR KEY PLAN (EL.+216.20)

SCALE 1:100



SECOND FLOOR KEY PLAN (EL.+220.20)

SCALE 1:100



THIRD FLOOR KEY PLAN (EL.+224.20)

SCALE 1:100

- NOTES :
1. ALL DIMENSIONS AND ELEVATIONS (F.A.L.) ARE IN METERS, UNLESS OTHERWISE SHOWN.
 2. SYMBOLS, ABBREVIATIONS AND GENERAL NOTES SEE DWG. NO. MHS-01-01.

REFERENCE DRAWINGS :

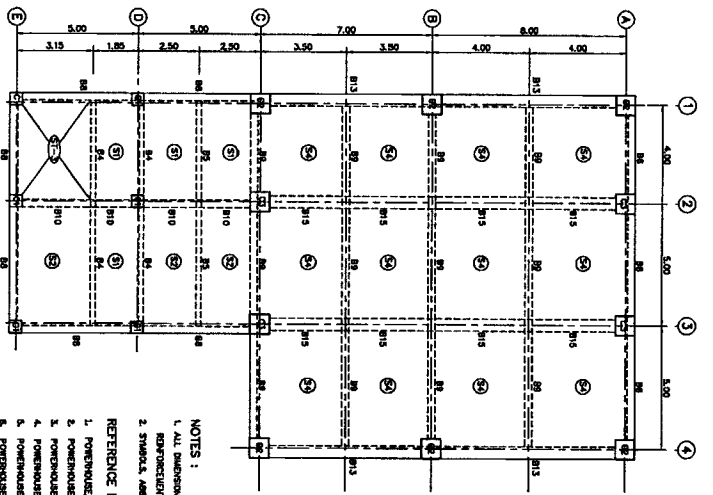
1. POWERHOUSE, PLANS SHEET 1/20
2. POWERHOUSE, PLANS SHEET 2/20
3. POWERHOUSE, KEY PLAN AND SLAB REINFORCEMENT DETAILS
4. POWERHOUSE, BEAM REINFORCEMENT DETAILS SHEET 1/20
5. POWERHOUSE, BEAM REINFORCEMENT DETAILS SHEET 2/20
6. POWERHOUSE, COLUMN, BRACKET AND FOOTING REINFORCEMENT DETAILS
7. POWERHOUSE, STAR REINFORCEMENT DETAILS
8. POWERHOUSE, CABLE TRENCH AND CABLE TRAY DETAILS
9. POWERHOUSE, REINFORCEMENT DETAILS SHEET 1/40

- MHS-PH-02
MHS-PH-03
MHS-PH-08
MHS-PH-10
MHS-PH-11
MHS-PH-12
MHS-PH-13
MHS-PH-14
MHS-PH-17



NO	DATE	REVISION	CHECKED	APPROVED
1				
2				
3				

KINGDOM OF THAILAND MINISTRY OF ENERGY DEPARTMENT OF ALTERNATIVE ENERGY DEVELOPMENT AND EFFICIENCY	
MAE HONG SON HYDROPOWER PROJECT	
CIVIL WORKS POWERHOUSE	
KEY PLANS	
DESIGNED BY DRAWN BY CHECKED BY DATE	REVIEWED BY APPROVED BY DATE
PROJECT NUMBER MHS-PH-08	SHEET NO. 90 OF 131



ROOF DECK KEY PLAN (EL.+228.20)

SCALE 1:100

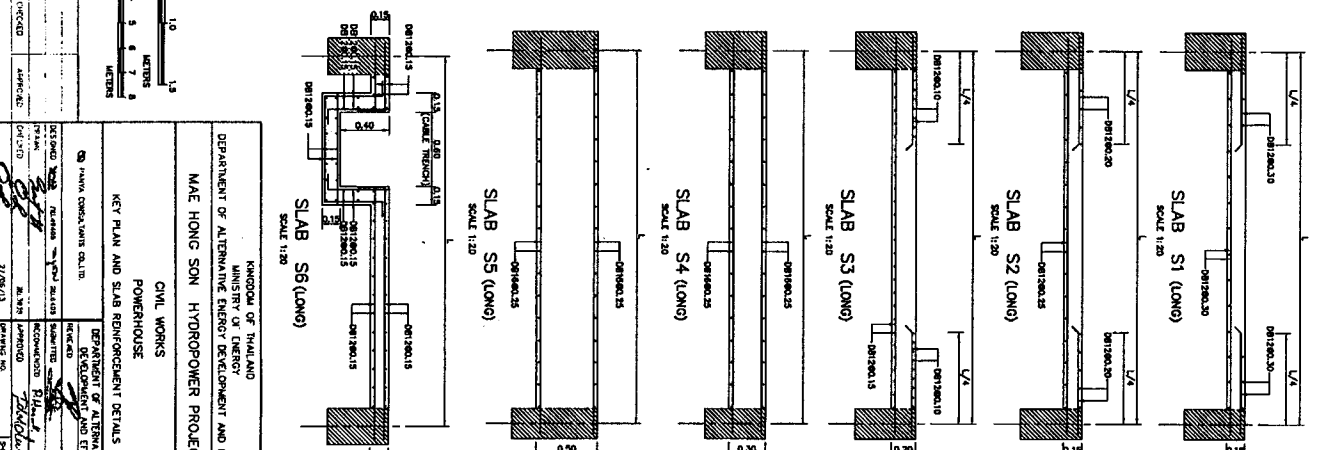
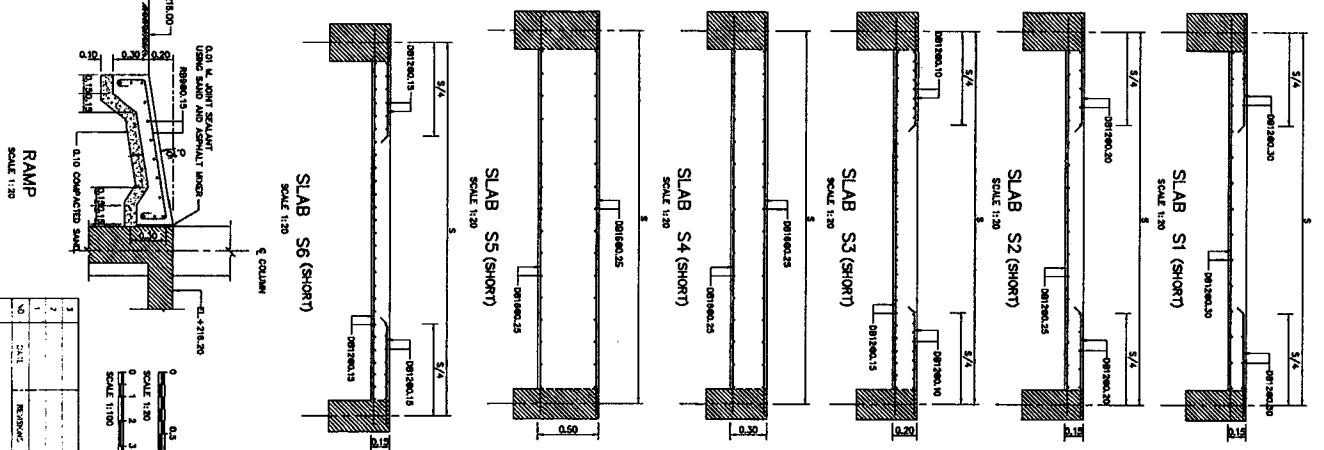
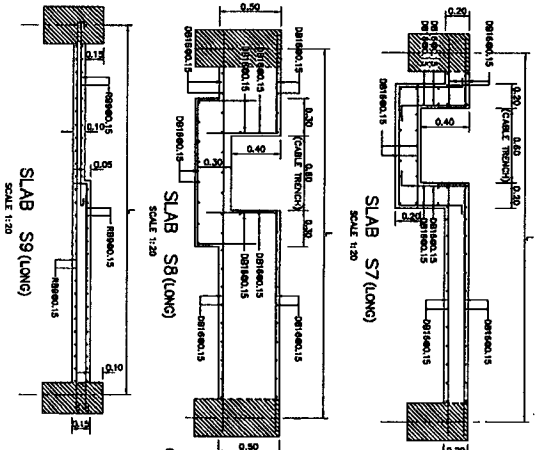
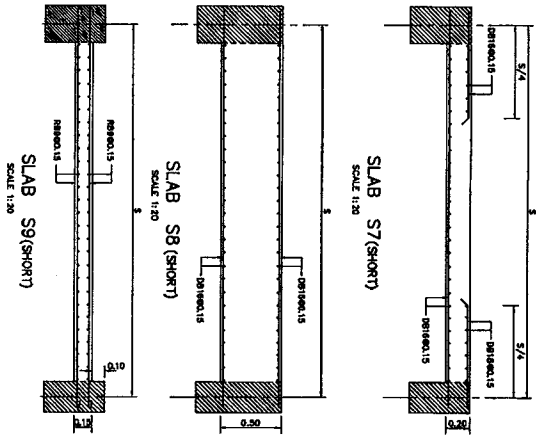
NOTES :

1. ALL DIMENSIONS AND ELEVATIONS (A.S.L.) ARE IN METERS
2. REINFORCEMENT BARS ARE IN MILLIMETERS, UNLESS OTHERWISE SHOWN.
3. SYMBOLS, ABBREVIATIONS AND GENERAL NOTES SEE DWG. NO. MS-CH-01.

REFERENCE DRAWINGS :

1. POWERHOUSE, PLANS SHEET 2/2
2. POWERHOUSE, KEY PLAN
3. POWERHOUSE, BEAM REINFORCEMENT DETAILS SHEET 1/2
4. POWERHOUSE, BEAM REINFORCEMENT DETAILS SHEET 2/2
5. POWERHOUSE, COLUMN, BRACKET AND FOOTING REINFORCEMENT DETAILS
6. POWERHOUSE, SLAB REINFORCEMENT DETAILS
7. POWERHOUSE, REINFORCEMENT DETAILS SHEET 3/4

MS-CH-03
MS-CH-04
MS-CH-10
MS-CH-11
MS-CH-12
MS-CH-13
MS-CH-15



REVISIONS			
NO.	DATE	REVISION	BY
1	27/06/13	ISSUED FOR TENDER	MS-CH-01
2	27/06/13	REVISION	MS-CH-01
3	27/06/13	REVISION	MS-CH-01

APPROVALS			
NO.	DATE	APPROVAL	BY
1	27/06/13	DESIGNED	MS-CH-01
2	27/06/13	CHECKED	MS-CH-01
3	27/06/13	APPROVED	MS-CH-01

PROJECT INFORMATION			
PROJECT NO.	MS-CH-01	DATE	27/06/13
PROJECT NAME	MAE HONG SON HYDROPOWER PROJECT	PROJECT LOCATION	MAE HONG SON
PROJECT TYPE	POWERHOUSE	PROJECT STATUS	DESIGNED

DESIGNER INFORMATION			
DESIGNER	MAE HONG SON	DESIGNER ADDRESS	MAE HONG SON
DESIGNER PHONE	02-222-2222	DESIGNER FAX	02-222-2222
DESIGNER EMAIL	ms-ch-01@mae-hong-son.com	DESIGNER WEBSITE	www.mae-hong-son.com

CLIENT INFORMATION			
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PROJECT LOCATION			
PROJECT LOCATION	MAE HONG SON	PROJECT LOCATION ADDRESS	MAE HONG SON
PROJECT LOCATION PHONE	02-222-2222	PROJECT LOCATION FAX	02-222-2222
PROJECT LOCATION EMAIL	ms-ch-01@mae-hong-son.com	PROJECT LOCATION WEBSITE	www.mae-hong-son.com

PROJECT STATUS			
PROJECT STATUS	DESIGNED	PROJECT STATUS ADDRESS	MAE HONG SON
PROJECT STATUS PHONE	02-222-2222	PROJECT STATUS FAX	02-222-2222
PROJECT STATUS EMAIL	ms-ch-01@mae-hong-son.com	PROJECT STATUS WEBSITE	www.mae-hong-son.com

PROJECT CONTACT			
PROJECT CONTACT	MAE HONG SON	PROJECT CONTACT ADDRESS	MAE HONG SON
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PROJECT NOTES			
PROJECT NOTES	MAE HONG SON	PROJECT NOTES ADDRESS	MAE HONG SON
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PROJECT NOTES EMAIL	ms-ch-01@mae-hong-son.com	PROJECT NOTES WEBSITE	www.mae-hong-son.com

PROJECT SUMMARY			
PROJECT SUMMARY	MAE HONG SON	PROJECT SUMMARY ADDRESS	MAE HONG SON
PROJECT SUMMARY PHONE	02-222-2222	PROJECT SUMMARY FAX	02-222-2222
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PROJECT INDEX			
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PROJECT APPENDIX			
PROJECT APPENDIX	MAE HONG SON	PROJECT APPENDIX ADDRESS	MAE HONG SON
PROJECT APPENDIX PHONE	02-222-2222	PROJECT APPENDIX FAX	02-222-2222
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PROJECT GLOSSARY			
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PROJECT BIBLIOGRAPHY			
PROJECT BIBLIOGRAPHY	MAE HONG SON	PROJECT BIBLIOGRAPHY ADDRESS	MAE HONG SON
PROJECT BIBLIOGRAPHY PHONE	02-222-2222	PROJECT BIBLIOGRAPHY FAX	02-222-2222
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PROJECT REFERENCES			
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PROJECT REFERENCES PHONE	02-222-2222	PROJECT REFERENCES FAX	02-222-2222
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PROJECT ACKNOWLEDGEMENT			
PROJECT ACKNOWLEDGEMENT	MAE HONG SON	PROJECT ACKNOWLEDGEMENT ADDRESS	MAE HONG SON
PROJECT ACKNOWLEDGEMENT PHONE	02-222-2222	PROJECT ACKNOWLEDGEMENT FAX	02-222-2222
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PROJECT DISCLOSURE			
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PROJECT RELEASE			
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PROJECT SIGNATURE			
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PROJECT INDEX			
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PROJECT BIBLIOGRAPHY			
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PROJECT RELEASE			
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PROJECT SIGNATURE			
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PROJECT STAMP			
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